

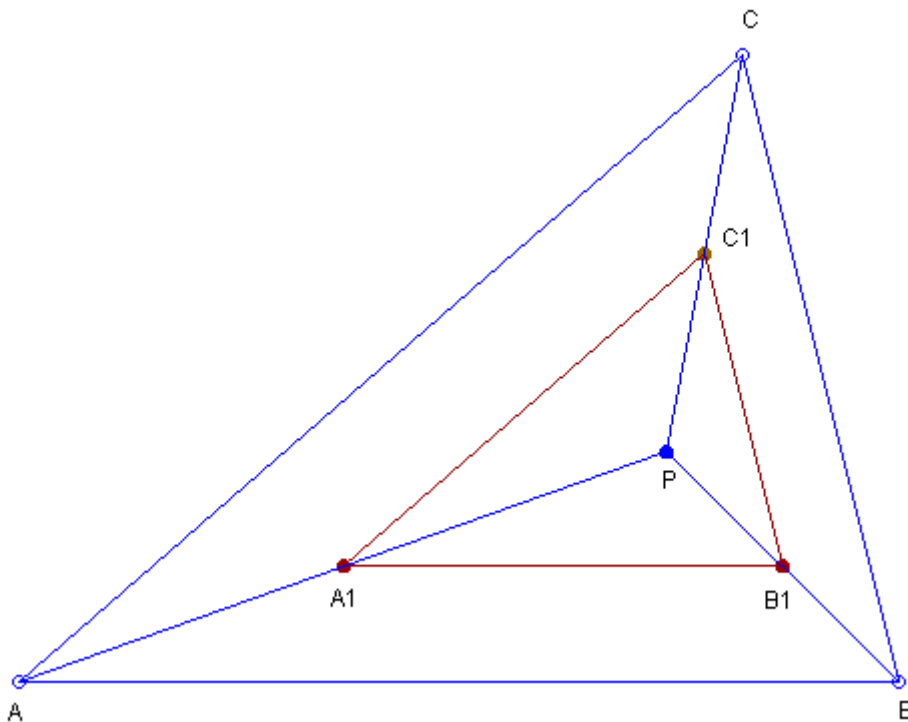
## Euler Triangles

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**Abstract.** We define Euler triangles and use the computer program "Machine for Questions and Answers" to study perspectives between Euler triangles and other triangles.

Given a triangle  $ABC$  and a Triangle Center, labeled by  $P$ . Construct the midpoints  $A_1$ ,  $B_1$ ,  $C_1$  of segments  $PA$ ,  $PB$ , and  $PC$ , respectively. We call triangle  $A_1B_1C_1$  the *Euler Triangle of the Triangle Center*.

See the Figure:



$P$  - Triangle Center;

$A_1$ ,  $B_1$ ,  $C_1$  - midpoints of segments  $PA$ ,  $PB$ , and  $PC$ , respectively;

$A_1B_1C_1$  - Euler Triangle of the Triangle Center.

In this Figure:

$P$  - Symmedian Point;

$A_1$ ,  $B_1$ ,  $C_1$  - midpoints of segments  $PA$ ,  $PB$ , and  $PC$ , respectively;

$A_1B_1C_1$  - Euler Triangle of the Symmedian Point.

If the Triangle Center is the Orthocenter, then the Euler Triangle of the Orthocenter is the known Euler Triangle.

### **Examples**

The Machine for Questions and Answers produces theorems on perspectives between Euler triangles and other triangles. A few examples are given below.

For any Triangle Center, Triangle ABC and the Euler Triangle of the Triangle Center are homothetic with homothetic center the Triangle Center.

The Incentral Triangle and the Euler Triangle of the Incenter are perspective with perspector the Incenter.

The Medial Triangle and the Euler Triangle of the Incenter are homothetic with homothetic center the Complement of the Spieker Center.

The Medial Triangle and the Euler Triangle of the Centroid are homothetic with homothetic center the Centroid.

The Medial Triangle and the Euler Triangle of the Circumcenter are homothetic with homothetic center the Complement of the Nine-Point Center.

The Medial Triangle and the Euler Triangle of the Gergonne Point are homothetic with homothetic center the Complement of the Mittenpunkt.

The Medial Triangle and the Euler Triangle of the Nagel Point are homothetic with homothetic center the Spieker Center.

The Medial Triangle and the Euler Triangle of the de Longchamps Point are homothetic with homothetic center the Circumcenter.

The Medial Triangle and the Euler Triangle of the Bevan Point are homothetic with homothetic center the Midpoint of the Circumcenter and the Spieker Center.

The Medial Triangle and the Euler Triangle of the Equal Parallelians Point are homothetic with homothetic center the Grinberg Point.

The Medial Triangle and the Euler Triangle of the Center of the Fuhrmann Circle are homothetic with homothetic center the Midpoint of the Nine-Point Center and the Spieker Center.

The Medial Triangle and the Euler Triangle of the Center of the Orthocentroidal Circle are homothetic with homothetic center the Midpoint of the Centroid and the Nine-Point Center.

The Symmedial Triangle and the Euler Triangle of the Symmedian Point are perspective with perspector the Symmedian Point.

The Intouch Triangle and the Euler Triangle of the Gergonne Point are perspective with

perspector the Gergonne Point.

The Extouch Triangle and the Euler Triangle of the Nagel Point are perspective with perspector the Nagel Point.

The Excentral Triangle and the Euler Triangle of the Incenter are perspective with perspector the Incenter.

The Anticomplementary Triangle and the Euler Triangle of the Centroid are homothetic with homothetic center the Centroid.

The Anticomplementary Triangle and the Euler Triangle of the Spieker Center are homothetic with homothetic center the Internal Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Tangential Triangle and the Euler Triangle of the Symmedian Point are perspective with perspector the Symmedian Point.

The Tangential Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Circum-Incentral Triangle and the Euler Triangle of the Incenter are perspective with perspector the Incenter.

The Circum-Incentral Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Circum-Medial Triangle and the Euler Triangle of the Centroid are perspective with perspector the Centroid.

The Feuerbach Triangle and the Euler Triangle of the Second Feuerbach Point are perspective with perspector the Second Feuerbach Point.

The Mixtilinear Triangle and the Euler Triangle of the Incenter are perspective with perspector the Incenter.

The Fuhrmann Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Mid-Arc Triangle and the Euler Triangle of the Incenter are perspective with perspector the Incenter.

The First Brocard Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Second Brocard Triangle and the Euler Triangle of the Symmedian Point are perspective with perspector the Symmedian Point.

The Third Brocard Triangle and the Euler Triangle of the Third Power Point are perspective

with perspector the Third Power Point.

The Fourth Brocard Triangle and the Euler Triangle of the Centroid are perspective with perspector the Centroid.

The de Villiers Triangle and the Euler Triangle of the First de Villiers Point are perspective with perspector the First de Villiers Point.

The Malfatti Central Triangle and the Euler Triangle of the Incenter are perspective with perspector the Incenter.

The Lucas Central Triangle and the Euler Triangle of the Circumcenter are perspective with perspector the Circumcenter.

The Neuberg Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Reflected Neuberg Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Johnson Triangle and the Euler Triangle of the Circumcenter are homothetic with homothetic center the Centroid.

The Johnson Triangle and the Euler Triangle of the Nine-Point Center are homothetic with homothetic center the Nine-Point Center.

The Johnson Triangle and the Euler Triangle of the de Longchamps Point are homothetic with homothetic center the Circumcenter.

The Inner Johnson-Yff Triangle and the Euler Triangle of the Incenter are homothetic with homothetic center the Incenter.

The Inner Johnson-Yff Triangle and the Euler Triangle of the Circumcenter are homothetic with homothetic center the External Center of Similitude of the Incircle and the Circumcircle.

The Inner Johnson-Yff Triangle and the Euler Triangle of the Bevan Point are homothetic with homothetic center the Perspector of the Orthic Triangle and the Excentral Triangle.

The Outer Johnson-Yff Triangle and the Euler Triangle of the Incenter are homothetic with homothetic center the Incenter.

The Outer Johnson-Yff Triangle and the Euler Triangle of the Circumcenter are homothetic with homothetic center the Internal Center of Similitude of the Incircle and the Circumcircle.

The Outer Johnson-Yff Triangle and the Euler Triangle of the Nine-Point Center are homothetic with homothetic center the Johnson Midpoint.

The Apollonius Triangle and the Euler Triangle of the Apollonius Point are perspective with

perspector the Apollonius Point.

The Outer Fermat Triangle and the Euler Triangle of the Outer Fermat Point are perspective with perspector the Outer Fermat Point.

The Outer Fermat Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Inner Fermat Triangle and the Euler Triangle of the Inner Fermat Point are perspective with perspector the Inner Fermat Point.

The Inner Fermat Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Outer Napoleon Triangle and the Euler Triangle of the Outer Napoleon Point are perspective with perspector the Outer Napoleon Point.

The Outer Napoleon Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Inner Napoleon Triangle and the Euler Triangle of the Inner Napoleon Point are perspective with perspector the Inner Napoleon Point.

The Inner Napoleon Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Outer Vecten Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Outer Vecten Triangle and the Euler Triangle of the Outer Vecten Point are perspective with perspector the Outer Vecten Point.

The Inner Vecten Triangle and the Euler Triangle of the de Longchamps Point are perspective with perspector the Circumcenter.

The Inner Vecten Triangle and the Euler Triangle of the Inner Vecten Point are perspective with perspector the Inner Vecten Point.

### **Euler Triangle**

Given a triangle, the Machine for Questions and Answers gives us examples of perspectives between the given triangle and other triangles. We consider the Euler Triangle (of the Orthocenter). A few examples of perspectives are given below.

Triangle ABC and the Euler Triangle are homothetic with homothetic center the Orthocenter.

The Medial Triangle and the Euler Triangle are homothetic with homothetic center the Nine-Point Center.

The Orthic Triangle and the Euler Triangle are perspective with perspector the Orthocenter.

The Circum-Orthic Triangle and the Euler Triangle are perspective with perspector the Orthocenter.

The Half-Altitude Triangle and the Euler Triangle are perspective with perspector the Orthocenter.

The Reflection Triangle and the Euler Triangle are perspective with perspector the Orthocenter.

The Johnson Triangle and the Euler Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Inner Johnson-Yff Triangle and the Euler Triangle are homothetic with homothetic center the Center of the Outer Johnson-Yff Circle.

The Outer Johnson-Yff Triangle and the Euler Triangle are homothetic with homothetic center the Center of the Inner Johnson-Yff Circle.

The Euler Triangle and the Anticevian Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Pedal Triangle of the Circumcenter are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Pedal Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Orthocenter are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Antipedal Triangle of the de Longchamps Point are perspective with perspector the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Circumcenter are homothetic with homothetic center the Centroid.

The Euler Triangle and the Circum-Orthic Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Reflection Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Johnson Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Inner Johnson-Yff Triangle are homothetic with homothetic center the Center of the Outer Johnson-Yff Circle.

The Euler Triangle and the Outer Johnson-Yff Triangle are homothetic with homothetic center the Center of the Inner Johnson-Yff Circle.

The Euler Triangle and the Medial Triangle of the Medial Triangle are homothetic with homothetic center the Circumcenter.

The Euler Triangle and the Cevian Triangle of the Circumcenter of the Medial Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Medial Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Euler Triangle of the Medial Triangle are homothetic with homothetic center the Centroid.

The Euler Triangle and the Lucas Central Triangle of the Medial Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Hexyl Triangle of the Medial Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Fuhrmann Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the First Brocard Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Neuberg Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Reflected Neuberg Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Johnson Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Johnson Triangle of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Anticevian Triangle of the Circumcenter of the Medial Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Anticevian Triangle of the Mittenpunkt of the Medial Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Tangential Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Medial Triangle are

homothetic with homothetic center the Circumcenter.

The Euler Triangle and the Pedal Triangle of the de Longchamps Point of the Medial Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Antipedal Triangle of the Circumcenter of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Circum-Orthic Triangle of the Intouch Triangle are homothetic with homothetic center the First Feuerbach Point.

For any Kiepert Triangle, the Euler Triangle and the Kiepert Triangle of the Orthic Triangle are perspective with perspector the Nine-Point Center.

For any Kiepert Triangle, the Euler Triangle and the Kiepert Triangle of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Anticevian Triangle of the Nine-Point Center of the Excentral Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Tangential Triangle of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Circumcenter of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Circum-Orthic Triangle of the Excentral Triangle are homothetic with homothetic center the External Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Euler Triangle and the Circum-Incentral Triangle of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Circumcenter of the Anticomplementary Triangle are homothetic with homothetic center the Centroid.

The Euler Triangle and the Euler Triangle of the Anticomplementary Triangle are homothetic with homothetic center the Centroid.

The Euler Triangle and the Fuhrmann Triangle of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the First Brocard Triangle of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Neuberg Triangle of the Anticomplementary Triangle are



perspective with perspector the Orthocenter.

The Euler Triangle and the Reflected Neuberg Triangle of the Anticomplementary Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Johnson Triangle of the Anticomplementary Triangle are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Incentral Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Medial Triangle of the Euler Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Cevian Triangle of the Circumcenter of the Euler Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Orthic Triangle of the Euler Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Cevian Triangle of the Nine-Point Center of the Euler Triangle are perspective with perspector the Midpoint of the Nine-Point Center and the Orthocenter.

The Euler Triangle and the Symmedial Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Intouch Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Extouch Triangle of the Euler Triangle are perspective with perspector the Fuhrmann Center.

The Euler Triangle and the Cevian Triangle of the Mittenpunkt of the Euler Triangle are perspective with perspector the Midpoint of the Mittenpunkt and the Orthocenter.

The Euler Triangle and the Cevian Triangle of the Spieker Center of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Spieker Center.

The Euler Triangle and the Cevian Triangle of the de Longchamps Point of the Euler Triangle are perspective with perspector the Circumcenter.

The Euler Triangle and the Cevian Triangle of the Bevan Point of the Euler Triangle are perspective with perspector the Spieker Center.

The Euler Triangle and the Medial Triangle of the Fuhrmann Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Medial Triangle of the Reflection Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Orthic Triangle of the First Brocard Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Orthic Triangle of the Hexyl Triangle are homothetic with homothetic center the Centroid.

The Euler Triangle and the Medial Triangle of the Inner Johnson-Yff Triangle are homothetic with homothetic center the Second Feuerbach Point.

The Euler Triangle and the Medial Triangle of the Outer Johnson-Yff Triangle are homothetic with homothetic center the First Feuerbach Point.

The Euler Triangle and the Excentral Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Anticomplementary Triangle of the Euler Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Anticevian Triangle of the Circumcenter of the Euler Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Anticevian Triangle of the Orthocenter of the Euler Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Anticevian Triangle of the Nine-Point Center of the Euler Triangle are perspective with perspector the Midpoint of the Nine-Point Center and the Orthocenter.

The Euler Triangle and the Tangential Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Anticevian Triangle of the Gergonne Point of the Euler Triangle are perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Anticevian Triangle of the Nagel Point of the Euler Triangle are perspective with perspector the Fuhrmann Center.

The Euler Triangle and the Anticevian Triangle of the Mittenpunkt of the Euler Triangle are perspective with perspector the Midpoint of the Mittenpunkt and the Orthocenter.

The Euler Triangle and the Anticevian Triangle of the Spieker Center of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Spieker Center.

The Euler Triangle and the Anticevian Triangle of the de Longchamps Point of the Euler Triangle are perspective with perspector the Circumcenter.

The Euler Triangle and the Anticevian Triangle of the Bevan Point of the Euler Triangle are perspective with perspector the Spieker Center.

The Euler Triangle and the Anticomplementary Triangle of the First Brocard Triangle are

perspective with perspector the Orthocenter.

The Euler Triangle and the Anticomplementary Triangle of the Neuberg Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Anticomplementary Triangle of the Reflected Neuberg Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Excentral Triangle of the Johnson Triangle are perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Anticomplementary Triangle of the Johnson Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Tangential Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Anticevian Triangle of the Mittenpunkt of the Johnson Triangle are perspective with perspector the Fuhrmann Center.

The Euler Triangle and the Anticevian Triangle of the Grinberg Point of the Johnson Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Anticevian Triangle of the Brocard Midpoint of the Johnson Triangle are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Euler Triangle of the Euler Triangle are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Mixtilinear Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Mid-Arc Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Reflection Triangle of the Euler Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Second Brocard Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Fourth Brocard Triangle of the Euler Triangle are perspective with perspector the Center of the Orthocentroidal Circle.

The Euler Triangle and the Malfatti Central Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Lucas Central Triangle of the Euler Triangle are perspective

with perspector the Nine-Point Center.

The Euler Triangle and the Neuberg Triangle of the Euler Triangle are perspective with perspector the Kiepert Center.

The Euler Triangle and the Johnson Triangle of the Euler Triangle are homothetic with homothetic center the Midpoint of the Nine-Point Center and the Orthocenter.

The Euler Triangle and the Inner Johnson-Yff Triangle of the Euler Triangle are homothetic with homothetic center the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Outer Johnson-Yff Triangle of the Euler Triangle are homothetic with homothetic center the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Johnson Triangle of the Fuhrmann Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Reflected Neuberg Triangle of the First Brocard Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Euler Triangle of the Johnson Triangle are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Fuhrmann Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the First Brocard Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Fourth Brocard Triangle of the Johnson Triangle are perspective with perspector the Center of the Orthocentroidal Circle.

The Euler Triangle and the Neuberg Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Reflected Neuberg Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Euler Triangle of the Inner Johnson-Yff Triangle are homothetic with homothetic center the Incenter.

The Euler Triangle and the Euler Triangle of the Outer Johnson-Yff Triangle are homothetic with homothetic center the Incenter.

The Euler Triangle and the Pedal Triangle of the Incenter of the Euler Triangle are perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Euler Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Pedal Triangle of the Orthocenter of the Euler Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Pedal Triangle of the Bevan Point of the Euler Triangle are perspective with perspector the Fuhrmann Center.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Fuhrmann Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Reflection Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Pedal Triangle of the Orthocenter of the First Brocard Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Pedal Triangle of the Orthocenter of the Hexyl Triangle are homothetic with homothetic center the Centroid.

The Euler Triangle and the Pedal Triangle of the de Longchamps Point of the Hexyl Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Inner Johnson-Yff Triangle are homothetic with homothetic center the Second Feuerbach Point.

The Euler Triangle and the Pedal Triangle of the Circumcenter of the Outer Johnson-Yff Triangle are homothetic with homothetic center the First Feuerbach Point.

The Euler Triangle and the Antipedal Triangle of the Incenter of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Circumcenter of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Antipedal Triangle of the Orthocenter of the Euler Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Antipedal Triangle of the de Longchamps Point of the Euler Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Orthocenter of the First Brocard Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Orthocenter of the Neuberg Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Orthocenter of the Reflected Neuberg Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Incenter of the Johnson Triangle are

perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Circumcenter of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Antipedal Triangle of the Orthocenter of the Johnson Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Circum-Incentral Triangle of the Euler Triangle are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Circum-Medial Triangle of the Euler Triangle are perspective with perspector the Center of the Orthocentroidal Circle.

The Euler Triangle and the Circumcevian Triangle of the Circumcenter of the Euler Triangle are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Circum-Orthic Triangle of the Euler Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Nine-Point Center of the Euler Triangle are perspective with perspector the Midpoint of the Nine-Point Center and the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Symmedian Point of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Circumcevian Triangle of the Gergonne Point of the Euler Triangle are perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Nagel Point of the Euler Triangle are perspective with perspector the Fuhrmann Center.

The Euler Triangle and the Circumcevian Triangle of the Mittenpunkt of the Euler Triangle are perspective with perspector the Midpoint of the Mittenpunkt and the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Spieker Center of the Euler Triangle are perspective with perspector the Midpoint of the Orthocenter and the Spieker Center.

The Euler Triangle and the Circumcevian Triangle of the de Longchamps Point of the Euler Triangle are perspective with perspector the Circumcenter.

The Euler Triangle and the Circumcevian Triangle of the Bevan Point of the Euler Triangle are perspective with perspector the Spieker Center.

The Euler Triangle and the Circum-Orthic Triangle of the Fuhrmann Triangle are

perspective with perspector the Orthocenter.

The Euler Triangle and the Circumcevian Triangle of the Symmedian Point of the Fourth Brocard Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Circum-Incentral Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Circum-Medial Triangle of the Johnson Triangle are perspective with perspector the Center of the Orthocentroidal Circle.

The Euler Triangle and the Circumcevian Triangle of the Circumcenter of the Johnson Triangle are homothetic with homothetic center the Circumcenter.

For any Kiepert Triangle, the Euler Triangle and the Kiepert Triangle of the Johnson Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the First Feuerbach Points of the Triangulation Triangles of the Circumcenter are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the Kiepert Centers of the Triangulation Triangles of the Circumcenter are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the Centroids of the Triangulation Triangles of the Orthocenter are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Triangle of the Circumcenters of the Triangulation Triangles of the Orthocenter are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the Centers of the Orthocentroidal Circles of the Triangulation Triangles of the Orthocenter are homothetic with homothetic center the Circumcenter.

The Euler Triangle and the Triangle of the Skordev Points of the Triangulation Triangles of the Orthocenter are homothetic with homothetic center the Centroid.

The Euler Triangle and the Triangle of the Centroids of the Triangulation Triangles of the Nine-Point Center are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the de Longchamps Points of the Triangulation Triangles of the de Longchamps Point are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the Centroids of the Triangulation Triangles of the Bevan Point are homothetic with homothetic center the Internal Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Euler Triangle and the Stevanovic Triangle of the Prasolov Points of the Triangulation triangles of the Incenter are perspective with perspector the Orthocenter.

For any Triangle Center, the Euler Triangle and the Stevanovic Triangle of the Centroids of the Triangulation triangles of the Triangle Center are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the Incenters of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Symmedian Points of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the First Isodynamic Points of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Second Isodynamic Points of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Third Power Points of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Moses Points of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Brocard Midpoints of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Bevan Points of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Internal Centers of Similitude of the Incircles and the Circumcircles of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the External Centers of Similitude of the Incircles and the Circumcircles of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Centers of the Brocard Circles of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Schoute Centers of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Weill Points of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Inner Kenmotu Points of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Outer Kenmotu Points of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.



the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Centers of the Taylor Circles of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Evans Pectors of the Corner Triangles of the Orthocenter are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Centers of the Apollonius Circles of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Radical Centers of the Lucas Circles of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Danneels-Apollonius Pectors of the Corner Triangles of the Orthocenter are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the Orthocenters of the Corner Triangles of the Gergonne Point are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Orthocenters of the Corner Triangles of the Nagel Point are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the Circumcenters of the Anticevian Corner Triangles of the Centroid are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Centroid are homothetic with homothetic center the Centroid.

The Euler Triangle and the Triangle of the Nine-Point Centers of the Anticevian Corner Triangles of the Centroid are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the de Longchamps Points of the Anticevian Corner Triangles of the Centroid are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Triangle of the Bevan Points of the Anticevian Corner Triangles of the Centroid are homothetic with homothetic center the External Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Euler Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Orthocenter are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Symmedian Point are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the First Feuerbach Points of the Anticevian Corner Triangles of the Symmedian Point are homothetic with homothetic center the Nine-Point

Center.

The Euler Triangle and the Triangle of the Kiepert Centers of the Anticevian Corner Triangles of the Symmedian Point are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the Inner Napoleon Points of the Anticevian Corner Triangles of the Second Isodynamic Point are perspective with perspector the Inner Fermat Point.

The Euler Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Center of the Stevanovic Circle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Orthocenter in the sides of the Medial Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the Nine-Point Center in the sides of the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Triangle of the reflections of the Incenter in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Moses Point in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Bevan Point in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Internal Center of Similitude of the Incircle and the Circumcircle in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the External Center of Similitude of the Incircle and the Circumcircle in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Weill Point in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Evans Perspector in the sides of the Intouch Triangle are perspective with perspector the First Feuerbach Point.

The Euler Triangle and the Triangle of the reflections of the Incenter in the sides of the Excentral Triangle are homothetic with homothetic center the External Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the sides of the Excentral Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the Orthocenter in the sides of the Anticomplementary Triangle are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the sides of the Anticevian Triangle of the Orthocenter are perspective with perspector the Circumcenter.

The Euler Triangle and the Triangle of the reflections of the de Longchamps Point in the sides of the Anticevian Triangle of the Orthocenter are homothetic with homothetic center the Centroid.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the sides of the Tangential Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the reflections of the Nine-Point Center in the sides of the Tangential Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Triangle of the reflections of the Schoute Center in the sides of the Tangential Triangle are perspective with perspector the Kiepert Center.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the vertices of the Medial Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the reflections of the Orthocenter in the vertices of the Medial Triangle are homothetic with homothetic center the Centroid.

The Euler Triangle and the Triangle of the reflections of the Nine-Point Center in the vertices of the Medial Triangle are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the reflections of the de Longchamps Point in the vertices of the Medial Triangle are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the Bevan Point in the vertices of the Medial Triangle are homothetic with homothetic center the External Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Euler Triangle and the Triangle of the reflections of the Orthocenter in the vertices of the Orthic Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the vertices of the Anticomplementary Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the reflections of the Skordev Point in the vertices of

the Anticomplementary Triangle are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Triangle of the reflections of the Orthocenter in the vertices of the Anticevian Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the de Longchamps Point in the vertices of the Tangential Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Orthic Triangle in the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Extouch Triangle in the Spieker Center are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Excentral Triangle in the Nine-Point Center are perspective with perspector the Midpoint of the Gergonne Point and the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Excentral Triangle in the Spieker Center are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticomplementary Triangle in the Circumcenter are homothetic with homothetic center the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticomplementary Triangle in the Orthocenter are homothetic with homothetic center the Centroid.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticomplementary Triangle in the Nine-Point Center are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticomplementary Triangle in the Spieker Center are homothetic with homothetic center the External Center of Similitude of the Bevan Circle and the Nine-Point Circle.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticomplementary Triangle in the Skordev Point are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticevian Triangle of the Orthocenter in the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Tangential Triangle in the Nine-Point Center are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticevian Triangle of the Mittenpunkt in the Nine-Point Center are perspective with perspector the

Fuhrmann Center.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticevian Triangle of the Grinberg Point in the Nine-Point Center are perspective with perspector the Midpoint of the Incenter and the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the vertices of the Anticevian Triangle of the Brocard Midpoint in the Nine-Point Center are perspective with perspector the Midpoint of the Orthocenter and the Symmedian Point.

The Euler Triangle and the Half-Medial Triangle are homothetic with homothetic center the Circumcenter.

The Euler Triangle and the Half-Altitude Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Grinberg Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Half-Anticomplementary Triangle are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Triangle of the reflections of the Circumcenter in the sides of Triangle ABC are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Triangle of the reflections of the Orthocenter in the sides of Triangle ABC are perspective with perspector the Orthocenter.

The Euler Triangle and the Triangle of the reflections of the Schoute Center in the sides of Triangle ABC are perspective with perspector the Kiepert Center.

The Euler Triangle and the Hatzipolakis Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Desmic Mate the Euler Triangle are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Medial Triangle are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Orthic Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Anticomplementary Triangle are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Anticevian Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Pedal Triangle of the Circumcenter are homothetic with homothetic center the Nine-Point Center.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Pedal Triangle of the Orthocenter are perspective with perspector the Orthocenter.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Antipedal Triangle of the Orthocenter are homothetic with homothetic center the Skordev Point.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Antipedal Triangle of the de Longchamps Point are perspective with perspector the Orthocenter.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Circumcevian Triangle of the Circumcenter are homothetic with homothetic center the Centroid.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Circum-Orthic Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Reflection Triangle are perspective with perspector the Orthocenter.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Johnson Triangle are homothetic with homothetic center the Center of the Orthocentroidal Circle.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Inner Johnson-Yff Triangle are homothetic with homothetic center the Center of the Outer Johnson-Yff Circle.

The Euler Triangle and the Outer Apollonius Triangle of the Lucas Circles of the Outer Johnson-Yff Triangle are homothetic with homothetic center the Center of the Inner Johnson-Yff Circle.

The Euler Triangle and the Cross Triangle of the Symmedian Point and the Orthic Triangle are perspective with perspector the Nine-Point Center.

The Euler Triangle and the Cross Triangle of the Centroid and the Medial Triangle are homothetic with homothetic center the Circumcenter.

For any Triangle Center, the Euler Triangle and the Cross Triangle of the Orthocenter and the Cevian Triangle of the Triangle Center are perspective with perspector the Orthocenter.

### **Invitation**

The reader is invited to submit a note/paper containing

- synthetic proofs of theorems from this paper,
- or, applications of theorems from this paper,
- or, additional references related to this paper.

## Definitions and Conventions

We use the definitions and conventions in accordance with [1 - 6] and papers published in this journal.

## The Level

The Machine for Questions and Answers is used to produce results in this paper. Currently the Machine has 6 levels of depths - 0,1,2,3,4,5. We use for this paper the level 0, that is, the Machine produces only elementary results. If we need deeper investigation, we have to use a level bigger than 0. Since the Machine for Questions and Answers produces too many results, it is suitable we to use bigger levels upon request, that is, for specific questions.

## Thanks

The figure in this note is produced by using the program C.a.R. (Compass and Ruler), an amazing program created by Rene Grothmann. The Grothmann's program is available for download in the Web: [Rene Grothmann's C.a.R.](#). It is free and open source. The reader may verify easily the statements of this paper by using C.a.R. Many thanks to Rene Grothmann for his wonderful program.

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