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Created, developed, and nurtured by Eric Weisstein at Wolfram Research

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Spieker Center

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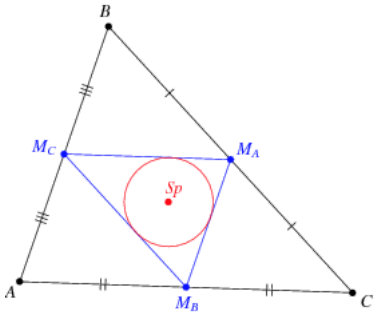
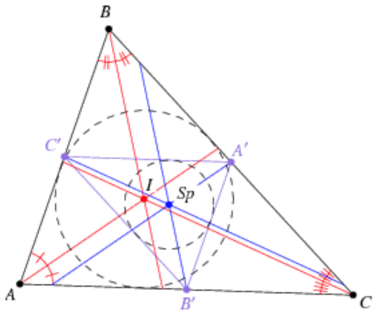


The Spieker center is the center Sp of the Spieker circle, i.e., the incenter of the medial triangle of a reference triangle Δ the excircles radical circle.

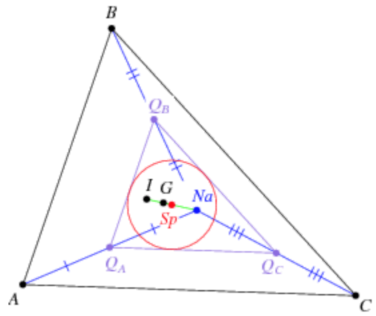
It has equivalent triangle center functions

$$\alpha_{10} = b\,c\,(b+c)$$
$$\alpha_{10} = \frac{b+c}{a},$$

and is Kimberling center X_{10}.

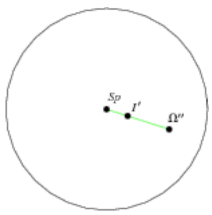


The Spieker center is also the centroid of the perimeter of the original triangle, as well as the cleavance center (Honsbe



The Spieker center lies on the Nagel line, and is therefore collinear with the incenter, triangle centroid, and Nagel point.

It lies on the Kiepert hyperbola.



The Spieker center, third Brocard point, and isotomic conjugate of the incenter are also collinear.

Distances to other named triangle centers include

$$SpCI = \left(2\left(a^3 + b\,a^2 + c\,a^2 + b^2\,a + c^2\,a + 2\,b\,c\,a + b^3 + c^3 + b\,c^2 + b^2\,c\right) I\,L\,r^2\right) / \left(a^5 - b\,a^4 - c\,a^4 + 2\,b\,c^2\,a^2 + 2\,b^2\,c\,a^2 - b^4\,a - c^4\,a + \right.$$

$$Sp\,F = \frac{9\,a\,b\,c\,I\,G}{8\,\Delta\,O\,I}$$
$$Sp\,G = \frac{1}{2}\,I\,G$$
$$Sp\,H = \frac{1}{2}\,I\,L$$
$$Sp\,I = \frac{3}{2}\,I\,G$$
$$Sp\,M = \frac{2\,I\,L\,r^2}{a^2 - 2\,a\,b + b^2 - 2\,a\,c - 2\,b\,c + c^2}$$
$$Sp\,N = \frac{1}{2}\,O\,I$$
$$SpNa = \frac{3}{2}\,I\,G,$$

where Cl is the Clawson point, G is the triangle centroid, I is the incenter, F is the Feuerbach point, H is the orthocenter, point, M is the mittenpunkt, N is the nine-point center, Na is the Nagel point, Δ is the triangle area, and r is the inradius.

SEE ALSO:
Brocard Points, Cleavance Center, Cleaver, Incenter, Isotomic Conjugate, Nagel Line, Perimeter, Spieker Circle, Taylor

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