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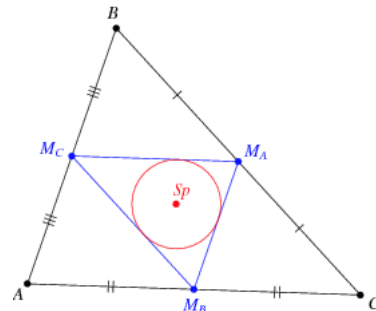
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Created, developed, and nurtured by Eric Weisstein at Wolfram Research

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## Spieker Center

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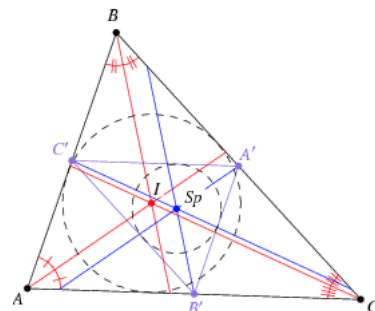
The Spieker center is the center  $Sp$  of the **Spieker circle**, i.e., the **incenter** of the **medial triangle** of a **reference triangle**  $\Delta$  the **excircles radical circle**.

It has equivalent **triangle center functions**

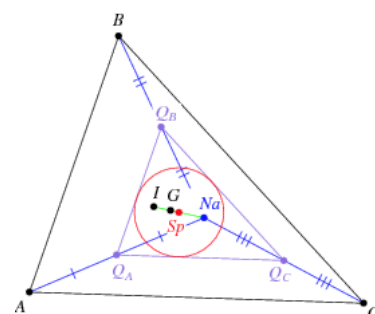
$$\alpha_{10} = b c (b + c)$$

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

and is **Kimberling center**  $X_{10}$ .

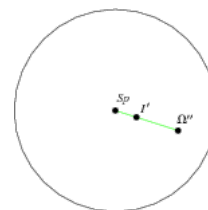


The Spieker center is also the centroid of the **perimeter** of the original **triangle**, as well as the **cleavage center** (Honsbe



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

$$SpC = \frac{2(a^3 + b^3 + c^3 + a^2b + a^2c + b^2a + b^2c + c^2a + c^2b + 2abc + b^3 + c^3 + b^2c + b^2a + c^2a + c^2b)}{(a^5 - b^4a - ca^4 + 2b^2c^2a^2 + 2b^2ca^2 - b^4a - c^4a +$$

$$\begin{aligned}
Sp F &= \frac{9abcIG}{8\Delta OI} \\
Sp G &= \frac{1}{2}IG \\
Sp H &= \frac{1}{2}IL \\
Sp I &= \frac{1}{2}IG \\
Sp M &= \frac{2ILr^2}{a^2 - 2ab + b^2 - 2ac - 2bc + c^2} \\
Sp N &= \frac{1}{2}OI \\
Sp Na &= \frac{1}{2}IG,
\end{aligned}$$

where  $Cl$  is the [Clawson point](#),  $G$  is the [triangle centroid](#),  $I$  is the [incenter](#),  $F$  is the [Feuerbach point](#),  $H$  is the [orthocenter](#),  $M$  is the [mittenpunkt](#),  $N$  is the [nine-point center](#),  $Na$  is the [Nagel point](#),  $\Delta$  is the [triangle area](#), and  $r$  is the [inradius](#).

#### SEE ALSO:

[Brocard Points](#), [Cleavage Center](#), [Cleaver](#), [Incenter](#), [Isotomic Conjugate](#), [Nagel Line](#), [Perimeter](#), [Spieker Circle](#), [Taylor](#)

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Referenced on Wolfram|Alpha: [Spieker Center](#)

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