BD +13 331: Triple system or SB2 with a Cepheid component ?

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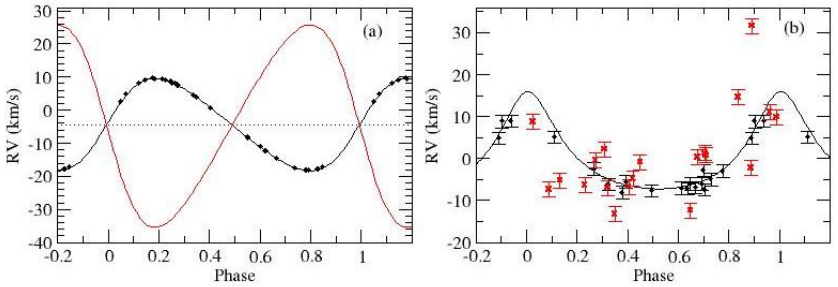
Gaia-DR3 : BD +13 331 (=HD 12871) is a solar-type star.

Observations with T193/Sophie: SB2 orbit + secondary component with a variable radial velocity (RV) + a 3rd component with the same RV as the barycentre of the SB2.

SB2: $P \approx 3\,¾$ yr
$\mathcal{M}_1 \geq 8\ \mathcal{M}_\odot$,
$\mathcal{M}_2 \geq 4\ \mathcal{M}_\odot$,

Secondary component: $P_2 = 0.1$ yr



Analysis of the secondary component's correlation dip over a 0.1 yr-period $\Rightarrow$ **<u>a pulsating variable star.</u>**

Conclusion: According to our study, BD +13 331 is a triple system consisting in a supergiant star, a massive pulsating secondary component (Cepheid or SRd) and a 3rd distant component.