# Evidence for a physically bound third component in HD 150136

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Context. HD 150136 is one of the nearest systems harbouring an O3 star. Although this system was for a long time considered as binary, more recent investigations have suggested the possible existence of a third component.
Aims. We present a detailed analysis of HD 150136 to confirm the triple nature of this system. In addition, we investigate the physical properties of the individual components of this system.
Methods. We analysed high-resolution, high signal-to-noise data collected through multi-epoch runs spread over ten years. We applied a disentangling program to refine the radial velocities and to obtain the individual spectra of each star. With the radial velocities, we computed the orbital solution of the inner system, and we describe the main properties of the orbit of the outer star such as the preliminary mass ratio, the eccentricity, and the orbital-period range. With the individual spectra, we determined the stellar parameters of each star by means of the CMFGEN atmosphere code.
Results. We offer clear evidence that HD150136 is a triple system composed of an O3V((f*))â€“3.5V((f+)), an O5.5â€“6V((f)), and an O6.5â€“7V((f)) star. The three stars are between 0â€“3 Myr old. We derive dynamical masses of about 64, 40, and 35 Msun for the primary, the secondary and t third components by assuming an inclination of 49Â° (sin^3 i = 0.43). It currently corresponds to one of the most massive systems in our galaxy. The third star moves with a period in the range of 2950 to 5500 d on an outer orbit with an eccentricity of at least 0.3. However, because of the long orbital period, our dataset is not sufficient to constrain the orbital solution of the tertiary component with high accuracy.
Conclusions. We confirm the presence of a tertiary star in the spectrum of HD 150136 and show that it is physically bound to the inner binary system. This discovery makes HD 150136 the first confirmed triple system with an O3 primary star.

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