

ORBITS IN THE T TAURI TRIPLE SYSTEM

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T Tauri is a triple star which became the eponymous member of the class of low-mass, pre-main-sequence stars. It consists of the northern component T Tau N and the binary T Tau S located $\sim 0.7''$ to the south, which is only visible in the infrared. The binary consists of T Tau Sa and T Tau Sb with a separation of about $0.1''$. Because of their small separation and short orbital period, it is possible to determine their orbital parameters within a reasonable time span.

We present new astrometric measurements of the relative positions in the T Tauri system, obtained with the new extreme adaptive optics facility SPHERE at the VLT. Model fits for the orbits of T Tau Sa and Sb around each other and around T Tau N yield orbital elements and individual masses of the stars Sa and Sb, which are $M_{\text{Sa}} = 2.12 \pm 0.10 M_{\odot}$ and $M_{\text{Sb}} = 0.53 \pm 0.06 M_{\odot}$. This confirms that T Tau Sa is at least as massive as T Tau N, despite the large contrast in visible light.

It was reported that a radio source near T Tau Sb experienced a dramatic change in its path, which led to the suggestion that T Tau Sb might be ejected from the system. However, if we use our current knowledge of the orbital motions to compute the position of the southern radio source in the rest frame of T Tau S, then we find no evidence for the proposed dramatic change in its path.