

Bispectrum speckle interferometry of the Orion Trapezium stars: detection of a close (33 mas) companion of Θ^1 Ori C

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Abstract. We present bispectrum speckle interferometry observations with the SAO 6 m telescope of the four brightest stars in the Orion Trapezium. Diffraction-limited images with an unprecedented resolution λ/D of 57 mas and 76 mas were obtained in the H- and K-band, respectively. The H and K images of Θ^1 Ori C (the star responsible for the proplyds) show for the first time that Θ^1 Ori C is a close binary with a separation of only ~ 33 mas (H-band observation). The sub-arcsecond companions of Θ^1 Ori A and Θ^1 Ori B reported by Petr et al. (1998) are confirmed. We use the magnitudes and colors of the companions to derive information about their stellar properties from the H-R diagram. In addition we briefly discuss the multiplicity of the Trapezium stars. Considering both, the visual and spectroscopic companions of the 4 Trapezium stars, it has been found that there are at least 7 companions, i.e. at least 1.75 companions per primary on average. This number is clearly higher than that found for the low-mass stars in the Orion Nebula cluster as well as in the field population. This suggests that the mechanisms operative in the formation of high-mass multiple systems in the dense Trapezium cluster and of low-mass stars are different.