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Multiplicity properties of massive stars through high-contrast imaging

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Detailed observations of the multiplicity properties of massive stars probing the full mass ratio and separation range are crucial for constraining massive star and binary formation models. However, the low-mass end of the companion mass function around massive stars remains largely unexplored due to the contrast limitations of previous spectroscopic and interferometric studies. Recently, the Carina High-contrast Imaging Project of massive Stars (CHIPS) showed that high-contrast imaging (VLT/SPHERE) enables us to explore the brown dwarf mass regime around massive stars at separations between 0".15 and 6"(~400-15000 AU). These observations provide key insights into whether low-mass (sub)stellar companions can form and survive in the harsh UV radiation fields of massive stars. In this talk, I will present the bias-corrected multiplicity fractions obtained from recent high-contrast imaging surveys of massive stars in various environments (Carina region, Sco OB1, M17). Additionally, I will discuss follow-up observations of multiple low-mass stellar and substellar companions in Sco OB1 and M17.

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Session Classification: Multiplicity in clustered environments