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Probing properties of dark matter via stellar kinematics around Sagittarius A*

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Precise measurements of the stellar orbits around Sagittarius A have established the existence of a supermassive black hole (SMBH) at the Galactic center (GC). In addition, the existence of extended mass distribution from dark matter, or novel interactions between dark matter and ordinary matter would imprint on the motions of stars in the innermost region of the GC. Using the Keck and VLT observations of orbits and motions of S-stars around Sagittarius A, we obtain stringent constraints on the density profile of dark matter distribution, as well as the coupling between dark matter and ordinary matter particles.

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Session Classification: Dark Matter