素粒子論セミナー

Composite Dark Matter from UV Freeze-In

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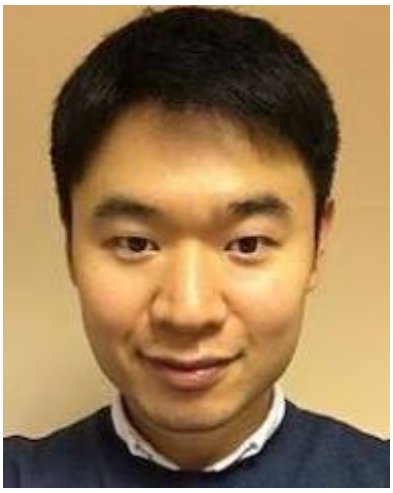

概要 In this talk, I will explore the production of composite dark matter through UV freeze-in, focusing on the interplay between ultraviolet production, confinement and dark-sector dynamics. As a concrete example, I will consider a confining SO(5) gauge theory coupled to the Standard Model through effective Higgs and electroweak gauge portals. I will discuss two dark matter candidates: the dark pion and the dark baryon. While dark pions thermalise internally, dark baryons exhibit distinct production histories, including non-thermal production, reannihilation and thermal freeze-out. I will show that this framework can accommodate superheavy dark matter, with viable dark baryon masses reaching approximately 10^{11} GeV, limited by decays induced by Planck-suppressed operators. Finally, I will discuss the phenomenological implications, including dark matter decays, self-interactions and late-time energy injection.

2027年1月29日（金）13:30〜　4号館4階　第1演習室

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