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Velocity-dependent cross-sections and gravothermal evolution of self-interacting dark matter halos

Monday 19 May 2025 14:15 (15 minutes)

Self-interacting dark matter (SIDM) provides an intriguing alternative to collisionless dark matter, especially when it comes to resolving small-scale structure problems. I will present our preliminary findings on gravothermal collapse in SIDM halos using an extended version of the GravothermalSIDM code, now capable of incorporating velocity-dependent cross sections from the CLASSICS repository and going beyond the Born limit for the Yukawa potential. This framework allows us to systematically explore a wide range of velocity dependencies and help us understand how these dependencies impact the onset and progression of gravothermal collapse. We specifically investigate scenarios involving light mediators, which naturally produce velocity-dependent interactions and I will discuss the potential to establish new limits based on the expected stage of gravothermal collapse these halos are in.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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