

# PHYSICS AND ASTRONOMY COLLOQUIUM

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The next astrophysical frontier in probing the fundamental nature of dark matter

Fundamental particle properties of dark matter leave distinct imprints on the mass and spatial distribution of structure over a vast range of scales, extending to masses far below galaxies’.

The internal structure of galaxies is predicted to carry these signatures. Most of the small-scale structures are not expected (nor observed, if they exist) to have stars, which would make them observable through conventional techniques.

However, they can be detectable through their gravitational influence on light traveling through them. An ideal path that is entirely sensitive to this gravitational signature is through strong gravitational lensing by cosmologically distant galaxies.

I describe the observational measurements that can discriminate between entire families of dark matter particle models, including those broadly associated with cold, warm, and interacting dark matter candidates, and how those observations can be achieved.



**THURSDAY, SEPTEMBER 01, 2016 | 4:00 PM | HAWKING AUDITORIUM**



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TEXAS A&M UNIVERSITY