

Dark Matter and Stars: Multi-Messenger Probes of Dark Matter and Modified Gravity

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Challenges to the Standard Cosmological Model

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The Lambda Cold Dark Matter (LCDM) model has been widely accepted as the standard cosmological model due to its good agreement with a broad range of cosmological data. However, recent studies have shown discrepancies among the model's key cosmological parameters, which have different levels of statistical significance. While some of these inconsistencies could be due to systematic errors, the persistence of such tensions across various probes suggests a potential failure of the canonical LCDM model. In this seminar, I will review the current tensions, including the Hubble constant disagreement, the S_8 tension, and the CMB tension, and explore proposed solutions that could potentially alleviate them. However, I will also discuss the limitations of these proposed solutions and note that none of them have successfully resolved the discrepancies. Nevertheless, there are a few intriguing possibilities that warrant further investigation.

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