Poster Session #B
Observational and space tests of gravitation

B16

Strong field tests of gravity with electromagnetic and gravitational waves: successes and challenges

Sourabh Nampalliwar (Eberhard Karls University of Tübingen)

Einstein's theory of gravity has been the standard theory for describing gravitational phenomena in our universe for several decades now. Along with its successes, there have been some questions, e.g., singularities, dark matter, dark energy, that have emerged for which it does not provide a satisfactory answer. This has led to proposals that modify or supersede Einstein's theory, and testing these theories against data, especially from the strong-field regime, has emerged as a new paradigm in physics in recent years. Along with the completely new avenue of gravitational waves, new and improved techniques based on electromagnetic waves are being used to test GR ever more stringently. As the realm beyond GR is unknown, a popular approach is to look for theory-agnostic deviations from GR/predictions of GR. I will describe constraints on some of these theory-agnostic deviations obtained up to now, and mention some of the challenges and opportunities going forward.