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Chameleons and Their Phenomenology

JUSTIN KHOURY, University of Pennsylvania

If dark energy consists of a light scalar field, it might be detectable as a fifth force between ordinary-matter objects, in potential conflict with precision tests of gravity. Chameleon fields and other theories with screening mechanisms, however, can evade these tests by suppressing the forces in regions of high density, such as the laboratory. The manifestation of chameleons therefore depends sensitively on their environment, which in turn leads to striking experimental signatures. I will review chameleon field theories, their phenomenology, and recent experimental constraints using atom interferometry.