

# Whispers from the Dark Universe - Particles & Fields in the Gravitational Wave Era

CLUSTER OF EXCELLENCE  
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## WHISPERS FROM THE DARK UNIVERSE – PARTICLES & FIELDS IN THE GRAVITATIONAL WAVE ERA

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## Effective Field Theory Approach to Binary Systems in Scalar-Tensor Theories

*Wednesday 25 September 2024 15:30 (15 minutes)*

Theories beyond General Relativity typically contain at least one additional scalar degree of freedom, effectively mediating an additional force. While this force must be highly suppressed in low-density environments—to pass current constraints—it generically leads to deviations from General Relativity in high-density / high-curvature environments, such as neutron stars and black holes, and thus impacts their observables. I will discuss how binary systems in scalar-tensor theories can be treated using an effective field theory approach and present results regarding observables such as the energy loss and the gravitational wave spectrum.

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