

**Name:** Susanna Barsanti

**Affiliation:** Sapienza University of Rome

**Title:** Extreme Mass Ratio Inspirals as probes of scalar fields

**Abstract:** Extreme Mass Ratio Inspirals (EMRIs), binary systems in which a stellar mass compact object inspiral into a massive black hole (MBH), are among the primary targets for LISA, as they harbour the potential for precise gravity test. Although the description of these systems in modified theories of gravity can be dramatically complex, for a vast class of theories with additional scalar fields great simplifications occur. First, the MBH scalar charge is strongly suppressed, so that the background spacetime is simply described by the Kerr metric. Moreover, all information about the underlying gravity theory turns out to be encoded in the inspiralling body's scalar charge. In this talk I will show how, for these theories, the surviving charge strongly affects the binary dynamics, accelerating its coalescence and leaving an imprint on the emitted gravitational waves. By analysing such signals, I will finally present the extremely promising results on the LISA's detectability of the scalar charge, which render EMRIs encouraging probes of gravity and of new fundamental fields.