



DIPARTIMENTO DI SCIENZE MATEMATICHE E INFORMATICHE, SCIENZE FISICHE E SCIENZE DELLA TERRA Dottorato di Ricerca in Fisica

Appunti di Fisica '25

14 maggio ore 15:00 Sala Seminari, CNR-IPCF

Raman Spectroscopy Coupled with Acoustic Levitation for the Analysis of Organic Matter of Astrobiological Interest

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In recent years, optical and acoustic tweezers coupled with Raman spectroscopy have emerged as effective tools for trapping, manipulating, and analysing micrometeorites and cosmic dust particles. Depending on their origin, these particles carry valuable information about the early stages of the solar system and the evolution of our universe. Determining their composition non-invasively is crucial, and the use of contactless techniques provides a key advantage in minimizing contamination. In this work, we explore the combined use of levitation and Raman spectroscopy not only for mineralogical identification but also for the detection of potential biosignatures in extraterrestrial samples. We investigated mineral analogues such as sulphates and smectite clays, which are well-documented on Mars and whose surfaces can host organic molecules of astro-biological interest.