

Ultra-heavy Exotic Particle Search with Olivine in Meteorites

Thursday, April 16, 2026 11:45 AM (30 minutes)

Ultra-heavy exotic particles (UHPs) are motivated by several proposed solutions to outstanding problems in particle physics. In this work, we focus on Q-balls and strange quark matter (SQM), which are well-motivated candidates for new physics and dark matter.

So far, we have investigated the track formation performance of muscovite mica and olivine, and found that both minerals are promising candidates for detecting such UHPs. In particular, olivine in meteorites is an especially attractive target for lighter particles with high dE/dx , as such particles may not be able to penetrate the Earth's atmosphere and rock.

Moreover, meteoritic olivine is also sensitive to rare galactic heavy cosmic rays. In this talk, we discuss the detection performance and the searchable parameter space of meteoritic olivine as a paleo-detector material.

Do you plan to give the talk in person?

Yes

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