



**Seminar, Department of Physical Sciences,
Bose Institute, Kolkata**



Quantum gravitational deflection of parallel matter wave beams

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Abstract: It is well known that two parallel photon beams do not deflect under the effect of their energy-momentum tensor. In this work, we propose a novel model where two spatially separated Bose-Einstein condensates are outcoupled to create two parallel atom laser beams. We find out that apart from the classical deflection, a purely quantum gravity induced tidal deflection is observed which results in an irreducible noise in the geodesic separation of the two beams. Based on this simple but novel theoretical outcome, we propose an experimental model for detecting this quantum gravity induced standard deviation in the geodesic separation of the two parallel matter-wave beams.

- Based on the work: Soham Sen and Vlatko Vedral, arXiv:2605.11035 [gr-qc].

- **Date/time: October 06, 2026 (Tuesday) at 03:00 PM**

- **Venue: Room 204, Physics Seminar Room, (Second floor, UAC, BI)**