Questioning the Planck Time: Is It Truly an Elementary Unit of Time?

Olivier Minazzoli*[1]

[1]ARTEMIS UMR 7250 – Observatoire de la Cote d'Azur – France

Abstract

Various efforts to quantize gravity provide compelling evidence that points toward the emerging nature of the smooth and/or continuous space-time structure at the Planck scale, which seemingly arises from a more fundamental, yet undiscovered, quantum structure. This notably suggests the existence of an elementary unit of time: the Planck time, valued at about 10-43 seconds. In this presentation, we put forth a non-linear, parameter-free reconfiguration of General Relativity's link between matter and space-time curvature at the level of the action. This novel viewpoint potentially affirms the elementary character of the smooth and continuous space-time inherent to classical General Relativity, while maintaining broad consistency with general relativity itself. We will investigate potential departures from General Relativity in solar system dynamics.

*Speaker