Contribution ID: **756** Type: **Invited talk in the parallel session**

Symplectic evolution of an observed light bundle

Wednesday, 7 July 2021 10:30 (20 minutes)

Each and every observational information we obtain from the sky regarding the brightnesses, distances or image distortions resides on the deviation of a null geodesic bundle. In this talk, we will present the symplectic evolution of it on a reduced phase space. The resulting formalism is analogous to the one in paraxial Newtonian optics. It allows one to identify any spacetime as an optical device and distinguish its thin lens, pure magnifier and rotator components. We will show that the distance reciprocity in relativity results from the symplectic evolution of this null bundle. Other potential applications like wavization and quantization will also be summarized.

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Session Classification: Gravitational Lensing and Shadows

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