

”The Trans-Carpathian Seminar on Geometry & Physics”

(See also the [Geometry & Physics @ DFT](#) seminar homepage)

Date: Wednesday, Nov. 12, 2025, 15:15 EET (Bucharest time)

Location: online via Zoom

Speaker: **Marcin Piatek** (Uniwersytet Szczeciński)

Title: **Geometric Foundations of Celestial Amplitudes**

Abstract: The geometric foundations of celestial holography will be developed, providing a reformulation of scattering theory in asymptotically flat spacetimes in which momentum-space amplitudes will be reorganized as conformal correlators on the celestial sphere at null infinity. The conventional framework will be reviewed through Penrose’s conformal compactification of Minkowski space, the analysis of the structure of future and past null infinity $I^\pm$, and the identification of the celestial sphere S^2 as the natural geometric setting for boundary data. The Mellin transform will be introduced to trade energy variables for conformal dimensions, leading to the construction of conformal primary wavefunctions from bulk plane waves and to the interpretation of soft theorems as Ward identities of a celestial conformal field theory on S^2 . In the second part, a differential-geometric formulation will be proposed, in which scattering amplitudes will be realized as distributional sections over null infinity, and Mellin maps will be interpreted as fiberwise push forwards. Potential implications and future directions of this geometric program on celestial amplitudes will be outlined.