

Title: **Positivity Constraints for Scattering Amplitudes and Effective Field Theories**

Type: Stage, These or Stage+These

Prerequisites: basic tools of QFT and particle phenomenology

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The soft limit of scattering amplitudes is constrained by first principles such as crossing symmetry, unitarity and analyticity. The resulting positivity bounds on the amplitudes can be translated into fundamental restrictions for the parameters that define the low-energy effective field theories. There are various directions, non-necessarily orthogonal, that the internship/these can take: (a) to study the relation between these positivity bounds and the causality or subluminal propagation constraints; (b) to study the impact of these theoretical bounds on certain classes of theories that are experimentally searched at the LHC; (c) construct new theories that satisfy these constraints; (d) extend to the analysis to the scattering of several particles; (e) to study the impact of the bounds on the scattering of higher spins; (e)...

To apply, please contact me by email attaching a detailed CV and have, possibly, one recommendation letter to be sent to my email address by your referee (e.g. the former advisor or somebody that knows you scientifically).