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# Quantum scattering beyond the plane-wave approximation

*Tuesday 22 August 2017 16:30 (30 minutes)*

We develop a quantum scattering theory with the different wave packets: coherent states, Schroedinger cats, vortex beams with orbital angular momentum, Airy beams, etc. Examples from QED, QCD and potential scattering on atoms are treated. A phase-space picture of the quantum scattering (via the Wigner functions) is developed and a contribution of possible negativity of the incoming packets' Wigner functions to the cross-section is studied. The means of extracting a contribution of phases of the scattering amplitudes (of a Coulomb- and a hadronic one) in a collision experiment beyond the plane-wave approximation are discussed.

## Topic:

Topic: High Energy Particle Physics

## Summary

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**Session Classification:** Parallel session

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