S@INT Seminar: "Photoproduction of the rho resonance on the lattice"

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Thursday, February 21, 2019 - 3:00pm
PAT C-421

I will present results on the rho resonance photoproduction from our recent lattice QCD study with $N_f=2+1$ clover fermions at a pion mass of approximately 320 MeV and lattice size 3.6 fm. The transition amplitude describing the photoproduction of the rho resonance on a pion is obtained from the more general process $\pi \gamma \to \pi \pi$ where the final state is in P-wave with quantum numbers $I=1$ and $J^{P}=1^{-}$. We employ the Briceno-Hansen-Walker-Loud approach to determine the $\pi \gamma \to \pi \pi$ transition amplitude in the invariant mass region near the rho resonance for both space- and time-like photon momentum. By analytic continuation to the rho pole we calculate also the rho radiative decay width.