

Contribution ID: 2577 Type: Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)

## Light-cone like spreading of correlations in the Bose-Hubbard model at strong coupling

Monday 3 June 2019 14:00 (15 minutes)

We study the spreading of correlations in space and time after a quantum quench in the Bose Hubbard model. We derive equations of motion for the single-particle Green's function within the contour-time formalism, allowing us to study dynamics in the strong coupling regime. We discuss the numerical solutions of these equations and calculate the single-particle density matrix for quenches in the Mott phase. We demonstrate light-cone like spreading of correlations in the Mott phase in one, two, and three dimensions and calculate propagation velocities in each dimension. Our results show excellent agreement with existing results in one dimension and demonstrate the anisotropic spreading of correlations in higher dimensions. We also discuss how our results can be extended to disordered systems.

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**Session Classification:** M2-1 Interaction Between Matter and Light (DAMOPC) | Interaction de la matière et de la lumière (DPAMPC)

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