

- Date & Time : **Wednesday 15th APR. 2026 14:00-15:30**
- Venue : Common Room, Information Science Bldg. 4F



Prof. Philip W Phillips

Professor
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“Solving the Mott Problem: Momentum-Mixing Hatsugai-Kohmoto”

Superconductivity in the copper-oxide ceramics remains a grand challenge in theoretical physics because of the paucity of tools to treat strongly coupled systems. In the context of the cuprates, the failure of the single-particle paradigm appears in the form of the Mott problem. I will show that breaking an overlooked local-in-momentum space Z_2 symmetry of a Fermi liquid provides a missing ingredient for a new Mott fixed point. I will show how the resultant model can be generalized to simulate the Hubbard model. In particular, I will show that it offers a new computational approach to Hubbard physics. It recovers the Bethe ansatz results in $d=1$ and the $d=\infty$ solutions as well and compare with “accepted” results in $d=2$, where no exact results are known.