# SEMPARIS – Séminaires en région parisienne

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## Theory of quantum matter

**Jeudi 7 Juillet 2022, 14 :00**
LPTHE, Seminar room at LPTMC towers 13-12 room 523 (5th floor)
Domaines : math-ph

Titre : *Manipulation of magnetic order and band topology through selective phonon excitation*

Orateur : **Gregory Fiete ( Northeastern university, Boston )**

Résumé : *Quantum materials driven out-of-equilibrium by a laser pump offer new opportunities for exploring intriguing quantum phenomena, including electron-correlation behaviors and topological properties of excitations. After reviewing some recent motivating pump-probe experiments, I will turn to our theoretical studies of driven many-body quantum systems. I will place particular emphasis on the situation where the laser frequency is chosen to selectively excite particular phonon modes and describe the impact of the non-equilibrium lattice on the electron properties, such as magnetism and band topology. The layered van der Waals materials CrI3 and MnBi2Te4 serve as excellent examples of the broader phenomena one might expect. I will also describe how hybrid phonon-magnon excitations in insulating antiferromagnets can exhibit highly tunable topological transitions in the presence of an externally applied magnetic field. The talk will conclude with an outlook for the prospects of achieving other interesting many-body phenomena in driven materials.*