

**Andrey
Chubukov**

University of Wisconsin
Department of Physics



Superconductivity from Repulsive Interactions

Department of Physics Colloquium



The theory of superconductivity, for which the Nobel Prize was given in 1972, named electron-phonon interaction as a glue that overcomes Coulomb repulsion and binds fermions into pairs which then condense and super-conduct. I review recent and not so recent works aiming to understand whether a nominally repulsive Coulomb interaction can by itself give rise to a superconductivity. I will first discuss a generic scenario of the pairing by electron-electron interaction, put forward by Kohn and Luttinger back in 1965 in their attempt to explain superfluidity in ^3He , and then move on to discuss modern studies of the electronic mechanisms of superconductivity in the cuprates, Fe-pnictides, and even in graphene.