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**Collective phenomena in correlated electron systems: superconductivity and density waves<sup>1</sup>**

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Interaction between electrons in strongly correlated materials is associated with many scientifically important and technologically useful phenomena, including superconductivity and exotically ordered charge and spin phases. I will review the recent advances of Raman spectroscopy aimed to characterize these extraordinary self-organized electronic phases, determine the condition under which they are formed, identify the underlying microscopic mechanisms, and test the relevant theories.

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