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Shedding new light on the phase diagram of cuprate superconductors

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In 1986, condensed-matter physics was profoundly shaken by the discovery of high-temperature superconductivity in materials known as cuprates. With a transition temperature *Tc* above liquid nitrogen temperature, these materials quickly proved to be promising for technological applications. However, the major motivation for the scientific community has been to understand the fundamental mechanisms of superconductivity in those materials, in order to eventually push *Tc* even higher, hopefully up to room temperature.

The phase diagram of cuprates as a function of temperature, chemical doping, magnetic field and pressure is challenging, as many different phases (insulating, metallic, magnetic, superconducting, etc.) intertwine and give spectacular and unexpected results. Despite attempts by many eminent theorists, a fully successful theory has not yet emerged. Recently, some experimental discoveries have shed new light on the mysterious phase diagram of cuprates. In this talk, I will review these discoveries and propose a scenario that could elucidate the phase diagram.

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