Departmental Lecture

Antwerp Young Minds – Department of Physics

Spin liquids and the phase diagram of the cuprates

prof. dr. Subir Sachdev (Harvard University)

Soon after the discovery of high temperature superconductivity in the cuprates, Anderson proposed a connection to quantum spin liquids. But observations since then have shown that the low temperature phase diagram is dominated by conventional states, with a competition between superconductivity and charge-ordered states which break translational symmetry. We employ the "pseudogap metal" phase, found at intermediate temperatures and low hole doping, as the parent to the phases found at lower temperatures. We argue that the pseudogap is associated with a spin liquid, and that a particular spin liquid (the “pi-flux” state with an emergent SU(2) gauge field) exhibits confining instabilities which can resolve a number of open puzzles on the cuprate phase diagram.

Monday 26th June

15h00	G.US.024	Colloquium
16h00	G.US.Hall	Reception

This lecture is part of a series in the framework of the 2023 Jacques Solvay International Chairs in Physics. Prof. Sachdev will also present:

- ULB 20 June Lecture
- ULB 22 June Tutorial
- KULeuven 23 June Colloquium
- Würzburg 3 July Colloquium
- Leiden 5 July Colloquium

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