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From Fermi Arcs to the Nodal Metal[1]

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The pseudogap phase in the copper oxide superconductors is a most unusual state of matter, and understanding its nature will likely resolve the issue of what interactions give rise to the superconductivity itself. Angle resolved photoemission has revealed that the pseudogap phase is characterized by a partially truncated Fermi surface, denoted as a Fermi arc. We have found that the arc length is proportional to T/T*, where T* is the pseuodgap temperature. Therefore, in the zero temperature limit, the pseudogap phase has the same nodal structure as the d-wave superconducting phase. Attempts to explain this novel behavior by a variety of theoretical models will be discussed, as well as the fate of these Fermi arcs once superconductivity sets in.

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