

Abstract Submitted
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Detection of s-wave superconductivity on monolayer CuO₂ films on Bi₂Sr₂CaCu₂O_{8+δ}.¹ YANG WANG, YONG ZHONG, SHA HAN, YANFENG LV, WENLIN WANG, DING ZHANG, HAO DING, YIMIN ZHANG, LILI WANG, KE HE, CANLI SONG, XUCUN MA, QIKUN XUE, Tsinghua Univ — High temperature superconductivity emerges when the CuO₂ layer touches the doped charge reservoir blocks. The redistributed charge carriers at these interfaces condense into coherent Cooper pairs, albeit the exact underlying mechanism is still highly controversial. Targeting at this, we have mimicked the CuO₂/charge reservoir interface by depositing the monolayer CuO₂ films on optimal doped Bi₂Sr₂CaCu₂O_{8+δ} substrates. Direct investigation on these superconducting CuO₂ films, however, yields results in stark contrast with the common recognition. Despite of the well-known V shaped pseudogap, a U shaped gap is identified. This U shaped gap disappears at T_C and is indifference to K, Cs and Ag adsorbates, in line with the traditional *s-wave* superconductivity. In view of these results, we propose that superconductivity in cuprates may indeed stem from the modulation doping induced two dimensional hole liquid, which is confined in the CuO₂ layers.

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