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Evidence for Induced Magnetization in Superconductor/Ferromagnet Bilayers ITAY ASULIN, OFER YULI, Racah Institute of Physics, The Hebrew University, Jerusalem 91904, Israel, GAD KOREN, Department of Physics, Technion-Israel Institute of Technology, Haifa 32000, Israel, ODED MILLO, Racah Institute of Physics, The Hebrew University, Jerusalem 91904, Israel
— The inverse proximity effect in superconductor/ferromagnet heterostructures has been the focus of recent theoretical studies. The different approaches share the basic conclusion that a sizable magnetic moment should penetrate into the superconductor side. The sign of this moment, its spatial behavior and the actual mechanism of this effect are still controversial. Very few experimental works provided evidence for the existence of such a magnetic moment inside the superconductor. However, the effects of such an induced magnetization on the density of states of the superconductor was not observed so far and needs further theoretical and experimental clarification. We have performed scanning tunneling spectroscopy of (001)$YBa_2Cu_3O_{7-\delta}$/$SrRuO_3$ and (110)$YBa_2Cu_3O_{7-\delta}$/$SrRuO_3$ bilayers, where the $SrRuO_3$ is an itinerant ferromagnet, and found an anomalous splitting of both the gap and zero bias conductance peak features that may provide evidence for the existence of such an induced magnetic moment inside the superconductor. The relevant length and energy scales of the effect will be discussed.

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