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Proximity effect of iron-based superconductor in conventional s -wave superconducting thin films NICK GROLL, THOMAS PROSLIER, ALEX KOSHELEV, VALENTIN STANTEV, DUCK-YOUNG CHUNG, Argonne National Laboratory — The proximity effect has been proposed as a mechanism to unambiguously identify the possible s_{\pm} -state in iron-based superconductors.¹ With a thin s -wave superconductor atop a s_{\pm} -superconductor it is suggested that the s -wave order parameter will couple to the s_{\pm} -gaps differently, inducing a correction to the s -wave density of states that can be probed using electron tunneling spectroscopy. In this talk, we will present recent results of the superconducting proximity effect in s -wave MoGe thin films sputtered on top of bulk superconducting $\text{Ba}_{0.6}\text{K}_{0.4}\text{Fe}_2\text{As}_2$ ($T_c=35\text{K}$) pnictide. Electron tunneling spectroscopy measurements were performed for several MoGe film thicknesses using a homemade point contact setup. Finally, results will also be presented for similar measurements using two conventional s -wave superconductors.

¹A. E. Koshelev, V. Stanev, Europhysics Letters, Vol. 96, 27014 (2011)

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