

## **Proximity effect in the asymmetrical incommensurable ferromagnet/ superconductor/ferromagnet trilayer**

Proshin Y., Luchkin R., Khusainov M.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### **Abstract**

In this report the original theory of a proximity effect is proposed for the ferromagnet/superconductor/ferromagnet (F1/S/F2) trilayer. The distinctions in ferromagnetic metals (F1 and F 2), in their thicknesses of ( $d_{F1}$  and  $d_{F2}$ ), in the transparencies of F1/S and S/F2 interfaces, and so on are reviewed among the causes of incommensurability of system. The quasiclassical approach of Usadel equations for dirty limit case is used to find critical temperature  $T_c$ . The peculiar  $T_c(d_{F1}, d_{F2})$  interference pattern is predicted for the F1/S/F2 systems with disproportionate thicknesses  $d_{F1}$  and  $d_{F2}$ . The possible applications to an observability of the spin-valve regime are discussed. © 2009 IOP Publishing Ltd.

<http://dx.doi.org/10.1088/1742-6596/150/5/052215>

---