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AC current rectification in Nb films with or without symmetrical Nb/Ni periodic pinning arrays in perpendicular magnetic field[1]
VLADIMIR PRYADUN, ARKADI LEVANYUK, RAUL VILLAR, FARKHAD ALIEV, Universidad Autonoma deMadrid — Rectification of AC current has been observed in plain superconducting Nb films and in Nb/Ni films with symmetric periodic pinning centers. The rectified DC voltage appears for various sample geometries (cross or strip) both along and transverse to the alternating current direction, is nearly anti-symmetric with perpendicular magnetic field and strongly dependent on temperature below T_c. Analyses of the data at different temperatures, drive frequencies from 100kHz to 150MHz and at the different sample sides [1] shows that not far below Tc the rectification phenomena can be understood in terms of generation of electric fields due to local excess of critical current. Further below T_c anisotropic pinning effects could also contribute to the rectification. [1] F.G.Aliev, et al., Cond. Mat.405656. Supported by Comunidad Autonoma de Madrid -CAM/07N/0050/2002

[1]Samples provided by J.L.Vicent and E.Gonzalez (Universidad Complutense de Madrid)

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