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Identifying the Odd-Frequency Superconducting State by a Field-Induced Josephson Effect[1] JACOB LINDER, Norw Univ of Sci & Tech, TAKEHITO YOKOYAMA, University of Nagoya, ASLE SUDBO, Norw Univ of Sci & Tech — The prevalent symmetry in known superconductors may be described as odd under exchange of spin coordinates, and even under an exchange of spatial or time coordinates of the electrons constituting the Cooper pair. However, other types of pairing are also permitted by the governing Pauli principle. Among these is the so-called odd-frequency pairing state, which has been predicted to arise both in N/S and F/S proximity systems. Extending the possible pairing states compatible with the Pauli-principle will likely have impact on a wide range of sub-disciplines in physics, ranging from astrophysics to extremely compressed quantum liquids. Recent experiments report that such an odd-frequency superconducting bulk state may be realized in certain heavy-fermion compounds. While the Josephson current normally only flows between superconductors with the same symmetries with respect to frequency, we demonstrate that an exchange field may induce a current between diffusive even- and odd-frequency superconductors. This suggests a way to identify the possible existence of bulk odd-frequency superconductors.

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