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Radiation induced oscillating gap states of nonequilibrium superconductors HUIYING LIU, JUNREN SHI, Peking Univ — In recent years, non-equilibrium superconducting phenomena induced by light have drawn great interests. We study effects of a light radiation to a BCS superconductor. The phase transition are obtained from the analysis of self-oscillation conditions of the irradiated dynamical systems. We find an oscillating gap phase solution with a frequency not directly related to the radiation frequency but resulting from the asymmetry of electron density of states of the system. When such a superconductor is in contact with another superconductor, it will give rise to an alternating Josephson current. We further discuss the existence conditions and properties of this alternating gap phase solution and its interesting effects on experiments.

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