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Dynamical I-V Characteristics of SNS Junctions KEVIN SPAHR, JONATHAN GRAVELINE, CHRISTIAN LUPIEN, Université de Sherbrooke, MARCO APRILI, Université Paris-Sud, BERTRAND REULET, Université de Sherbrooke — We probe the dynamics of a Superconductor /Normal Metal/ Superconductor junction (SNS: Nb / Al above its critical temperature / Nb) by measuring its voltage / current characteristics while applying an ac current of frequency in the range 1-200 MHz. We observe a dynamical phase transition as a function of the frequency and amplitude of the ac current. At low frequency there is a continuous change in the dynamical behavior of the junction, replaced an abrupt change and hysteresis at high frequency. The crossover frequency between the two regimes has a strong temperature dependence similar to that of the electron-phonon interaction rate.

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