

Analysis of the Heavily Beam-Loaded SOLEIL RF System, A. MOSNIER, SOLEIL (France); F. ORSINI, SOLEIL (France); B. PHUNG, CEA/DAPNIA (France) - The RF system of the SOLEIL light source involves superconducting cavities and is working in the heavily beam-loaded limit. Fast amplitude and phase feedback loops provide the required stability of the rf system with particle beam. The steady-state behaviour is analysed using conventional feedback theory, whereas transient beam-loading, arising for example from beam injection or some gap in the bunch train is studied with the help of a numerical code simulating the beam-cavity interaction and feedback loops.