> Collective Effects at LEIR : Cooling vs Heating

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LEIR is a Low Energy Ion Ring at CERN used as injector for the ion runs in the LHC. To maximize the luminosity, the beam emittance is reduced using an electron cooler. Two main effects hamper electron cooling, leading to emittance growth: intra-beam scattering and space-charge effects. These effects become even more relevant when electron cooling reduced the phase-space dimensions of the beam. This study aims at a systematic and quantitative evaluation of the opposite effects of cooling and heating on the ion beam, as a function of the electron cooler and ring setups.