

**Electron Cooler Driven Transverse Resonances,**  
V. ZIEMANN, The Svedberg Laboratory - The cylindrical transverse charge profile of the electron beam in an electron cooler causes a linear tune shift of the ion beam when it is fully immersed in the electron beam. Near the edge of the electron beam, however, the electric field is highly non-linear and will perturb the motion of the ion beam. This regime is of interest for accelerators that use electron cooling to improve accumulation, especially after injection when the ions' beam size is larger than that of the electrons. In this report we analyze the magnitude of this effect and calculate the resonance driving terms of the electric field created by a cylindrical electron beam.