

Vibration of the Magnet-Girder Assembly,
L ZHANG, ESRF - Mechanical stability of the magnet girder assembly in a synchrotron is essential for beam stability since the amplitude transfer function of the magnets reaches 100 in the vertical direction and 20 in the lateral direction. For the further improvement of the ESRF machine performance, it is necessary to improve the mechanical stability of the magnet-girder assemblies. Vibration responses of in-situ magnet-girder assemblies and a prototype have been measured. The first eigen mode is a lateral mode with natural frequency between 7-8.5 Hz depending on the type of assembly. Characterisation tests were performed for the prototype: modal and operating deflection shape tests, vibration response measurements, stiffness measurements. A finite element analysis (FEA) model is matched to measurement results. This FEA model is then utilised to simulate and assess different vibration damping solutions. The optimised option will be tested on the prototype.