

The Ground Vibrations Measurement at SSRF Site and Their Effect Evaluation

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Shanghai Synchrotron Radiation Facility (SSRF) is a 3rd generation light source which is now under construction. In order to give full scope of its ability, it has to be operated in very stable conditions. Even slight movements of magnetic elements of the accelerator may lead to problems with beam stability.

It is a very challenging task to build an advanced 3rd generation light source on soft soil at urban Shanghai area where over 300 m deep alluvion has an amplified effect on microseism, and the activities caused by the dense population give rise to high level cultural noises.

Vibration measurements have been carried out at SSRF site as a collaboration between SSRF and DESY. Both sides used their own measurement systems and data processing programs, and the results match well by comparison. Fig.1 and 2 show part of the results.

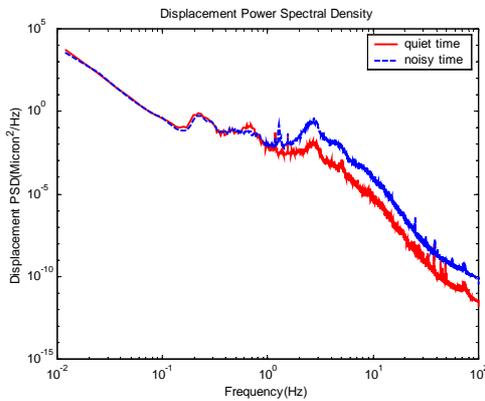


Figure. 1 Displacement Power Spectral Density for quiet time and noisy time

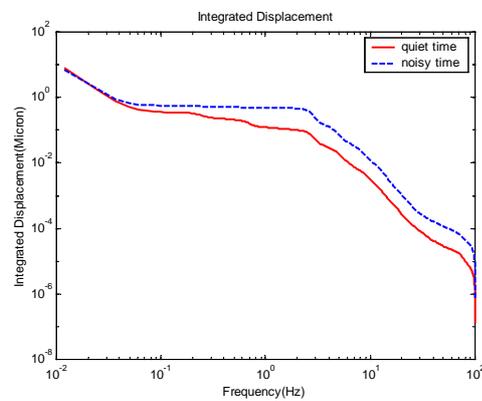


Figure. 2 Integrated Displacement for quiet time and noisy time

The predicted effect of the vibration on the SSRF lattice is also calculated.