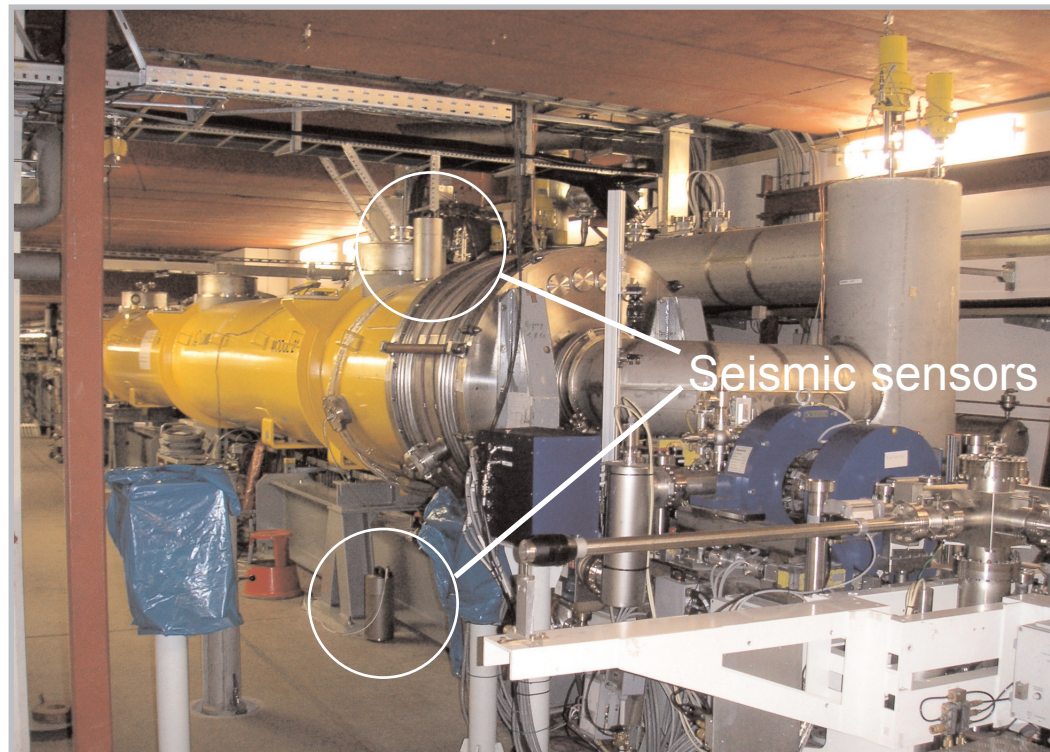


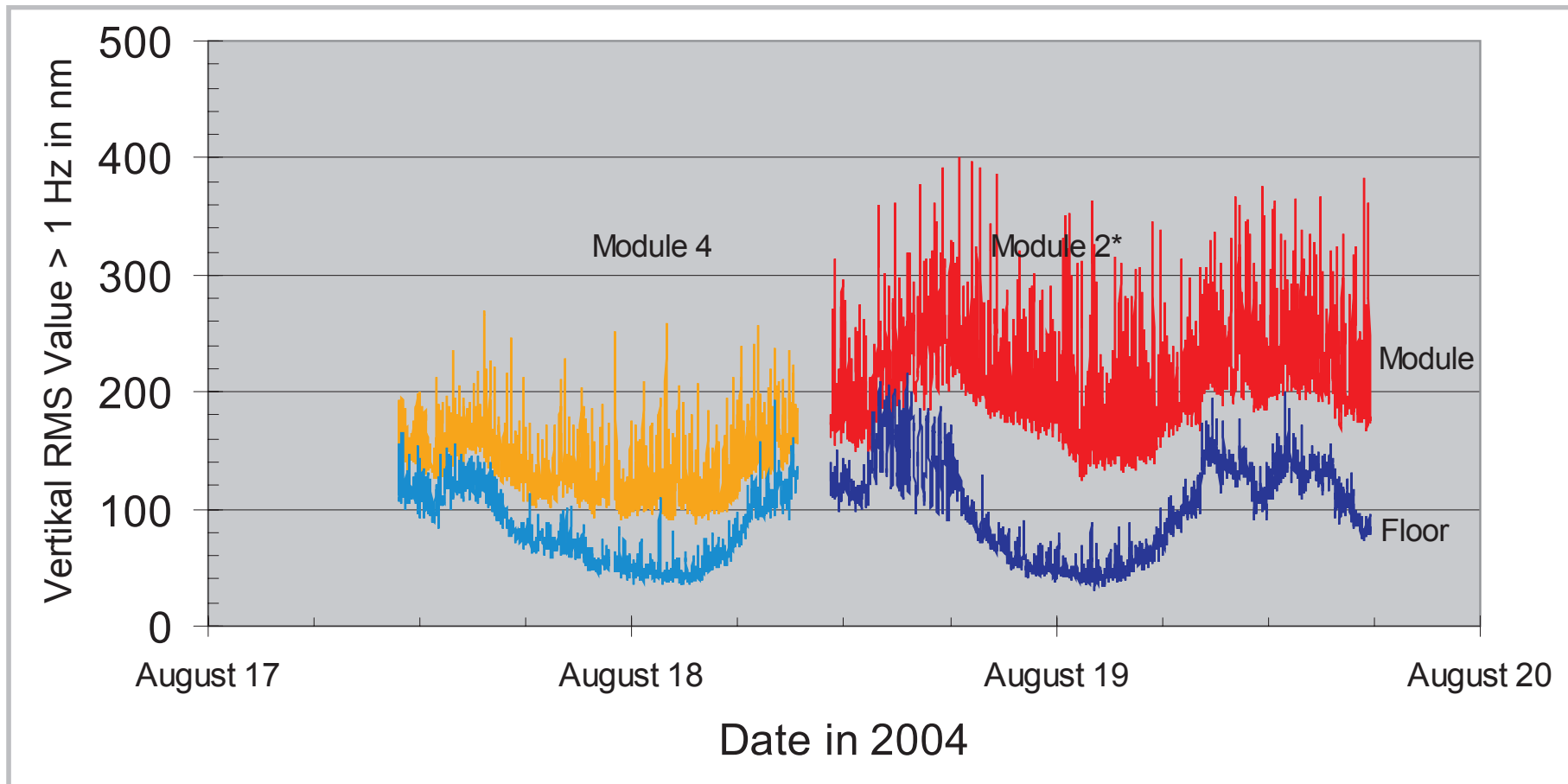
First Results of the Vibration Measurements with Seismic Sensors at TTF Modules

Wilhelm Bialowons and Heiko Ehrlichmann · DESY

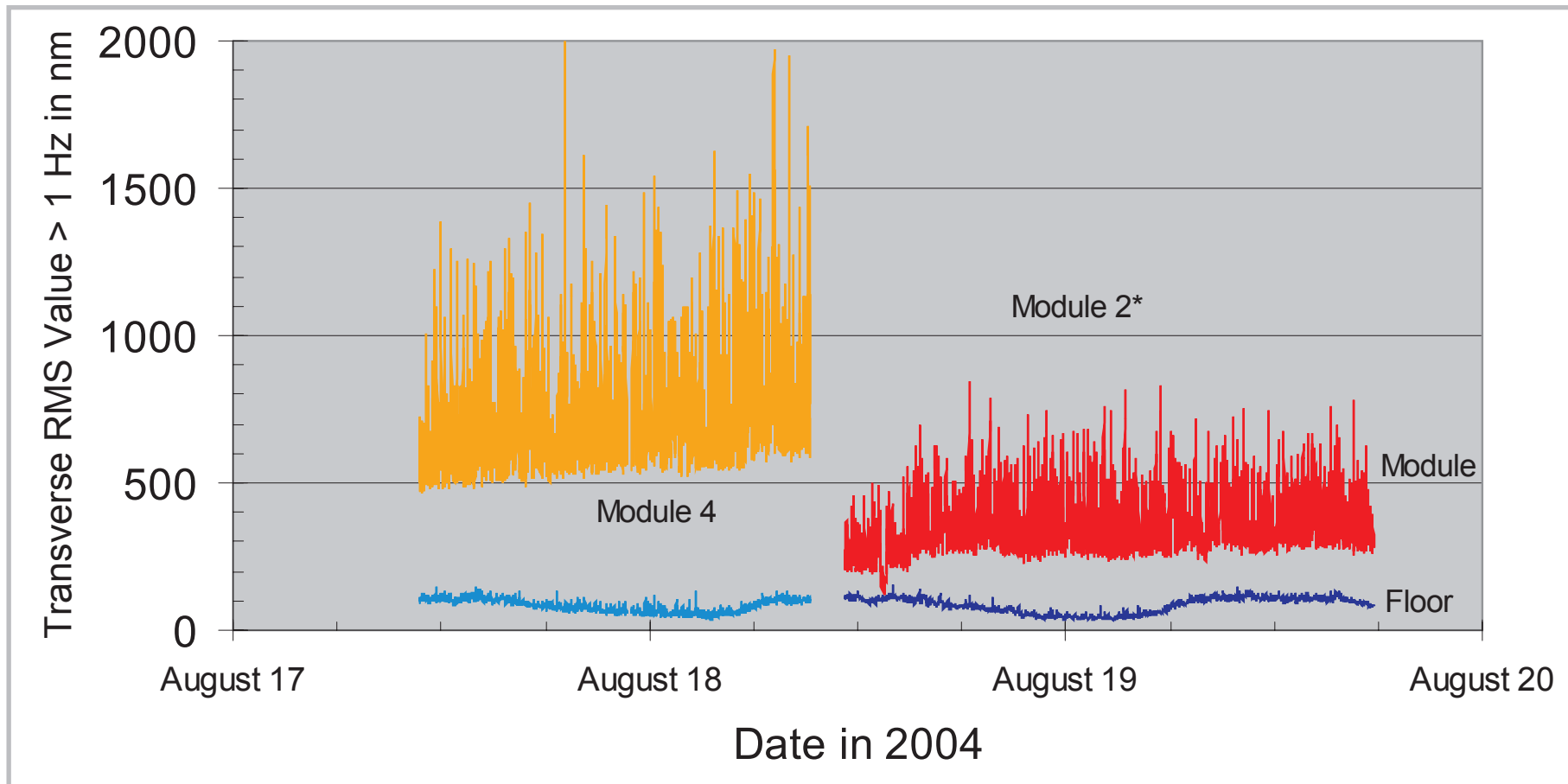




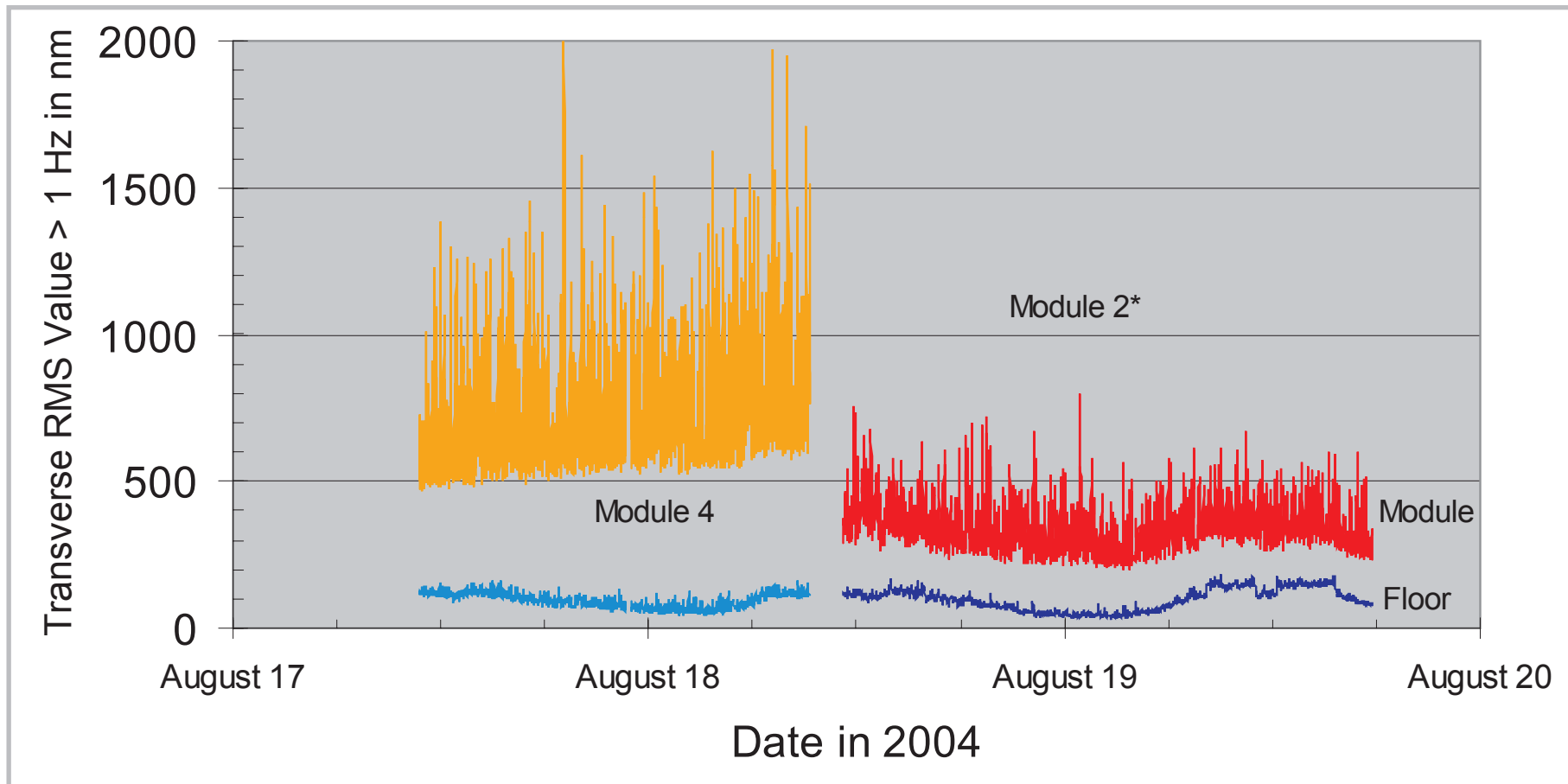
View of vibration measurements on the floor and on the module 4 and 2* at TTF.



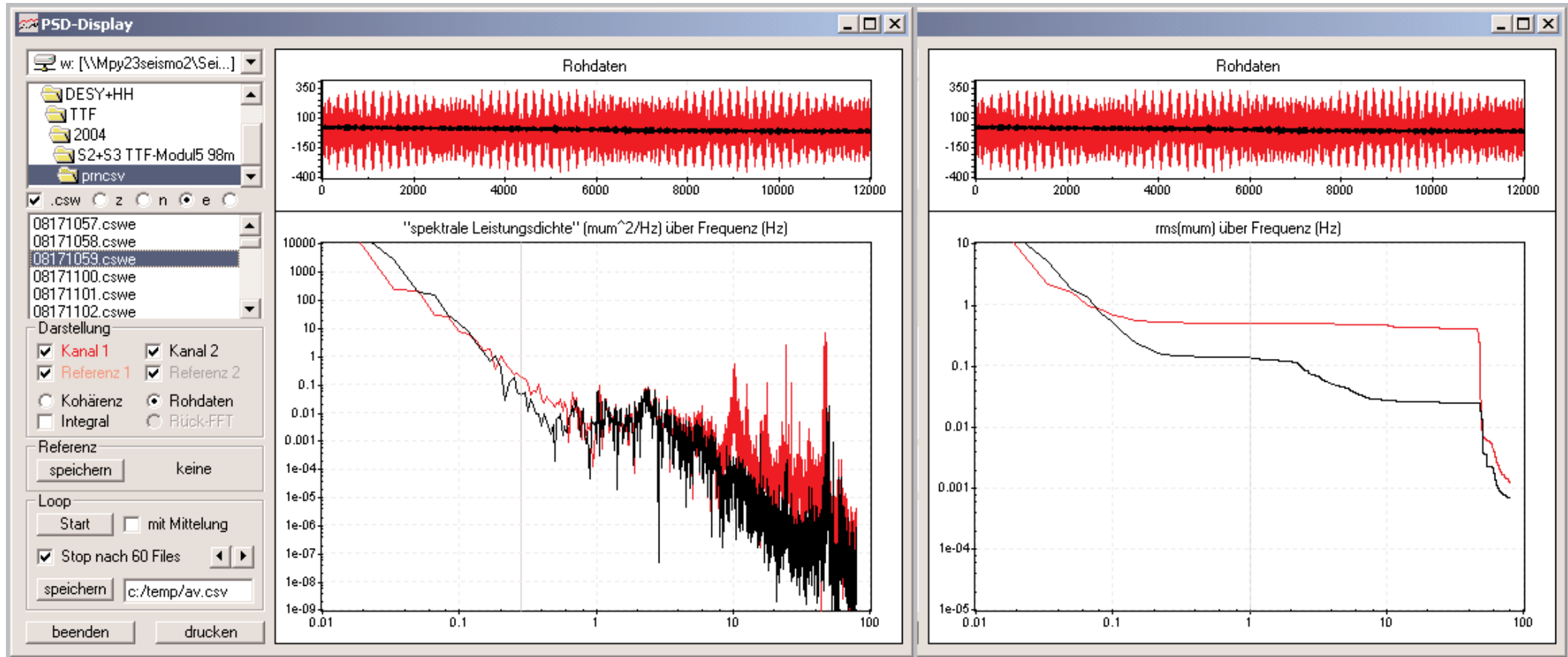
Comparisation between the vertical vibration on the floor and on the module 4 and 2*.



Comparisation between the longitudinal vibration on the floor and on the module 4 and 2*.

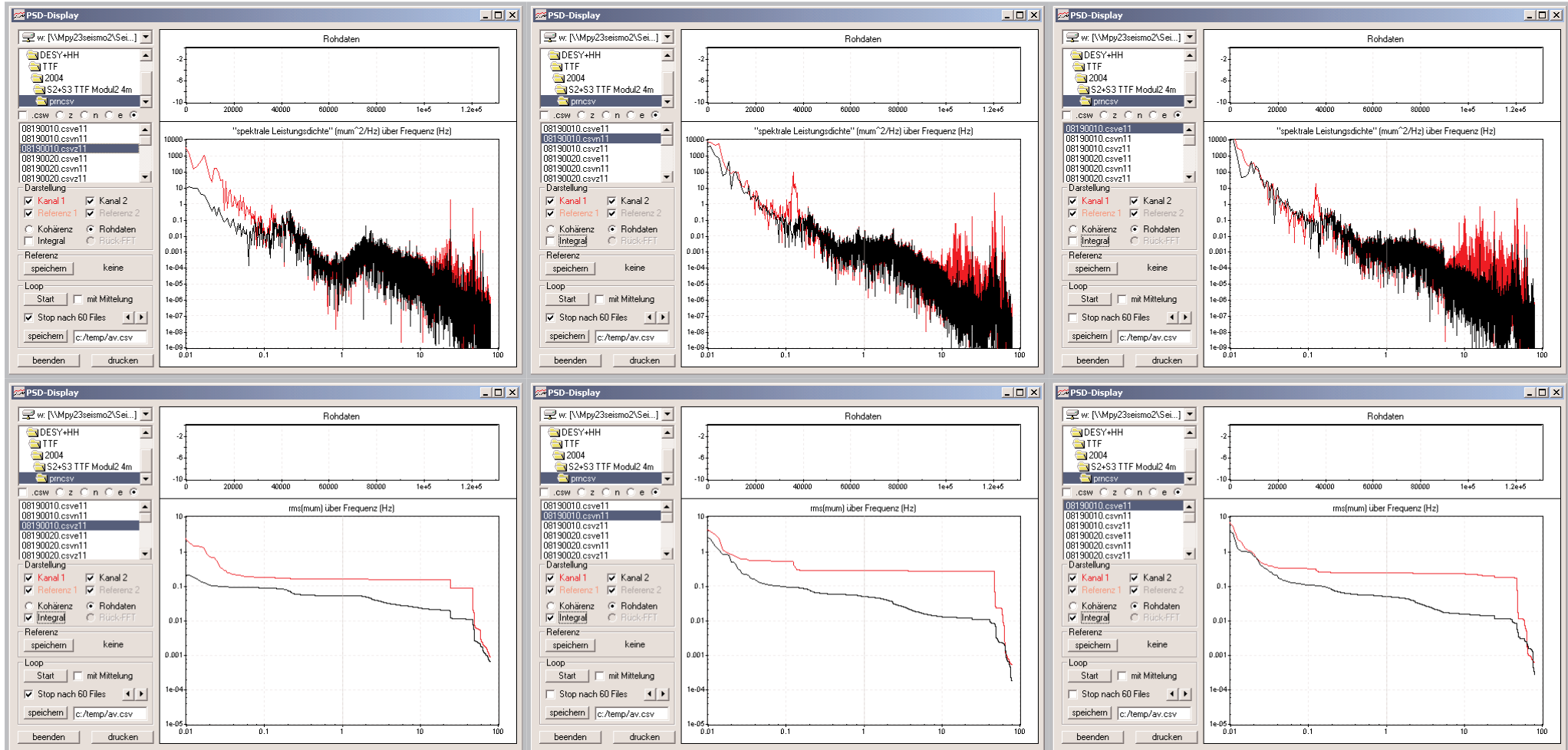


Comparisation between the transversal vibration on the floor and on the module 4 and 2*.



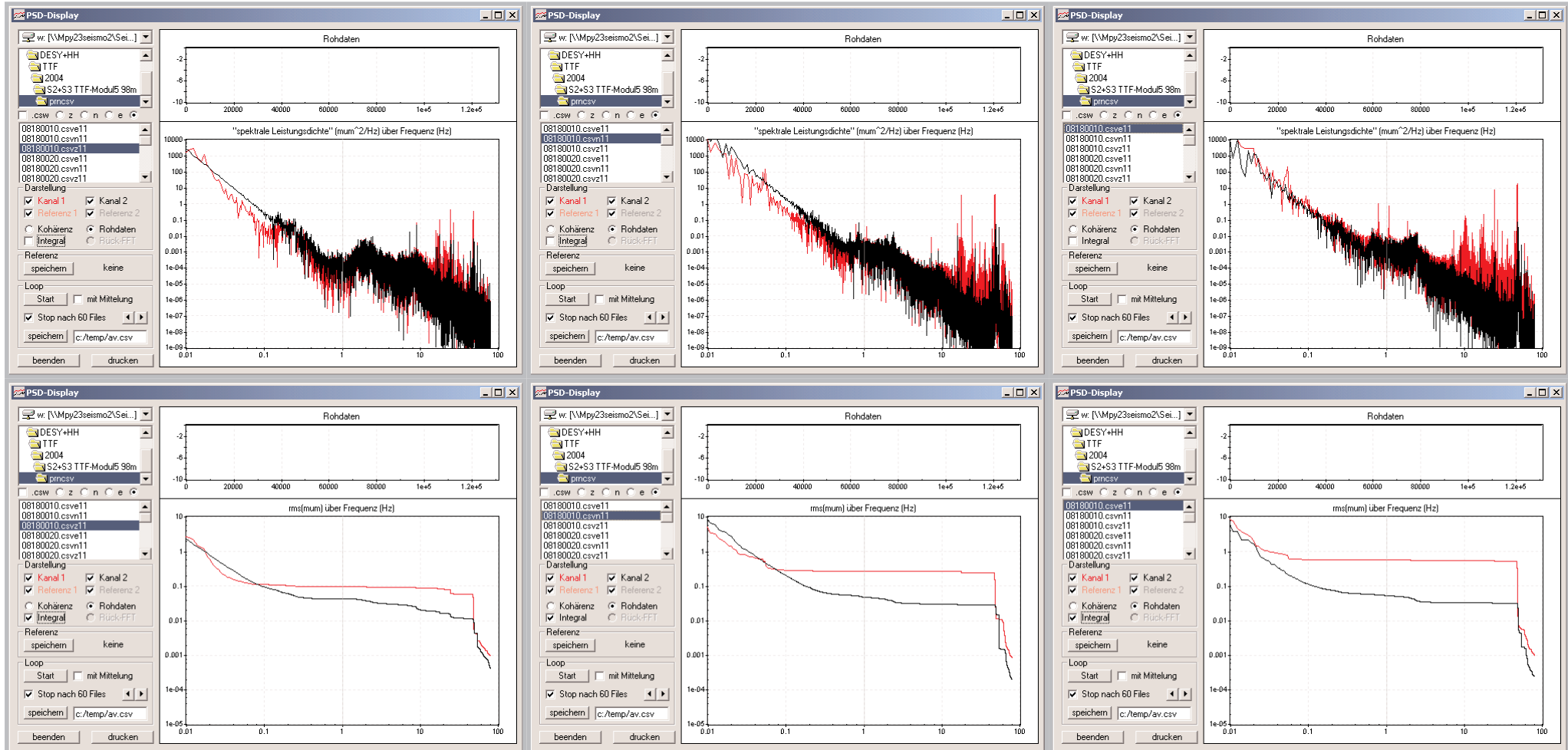
Transverse power spectra and RMS values measured at module 4.

(One minute data analysis, Fourier Transformation, Frequency of pre pump motor for the insulation vacuum is 23 to 25 Hz.)



Power spectra and RMS values of the vibration on the floor and on the **module 2***.

(Eleven minute (2^{17} data points) data analysis, Fast Fourier Transformation)



Power spectra and RMS values of the vibration on the floor and on the **module 4**.

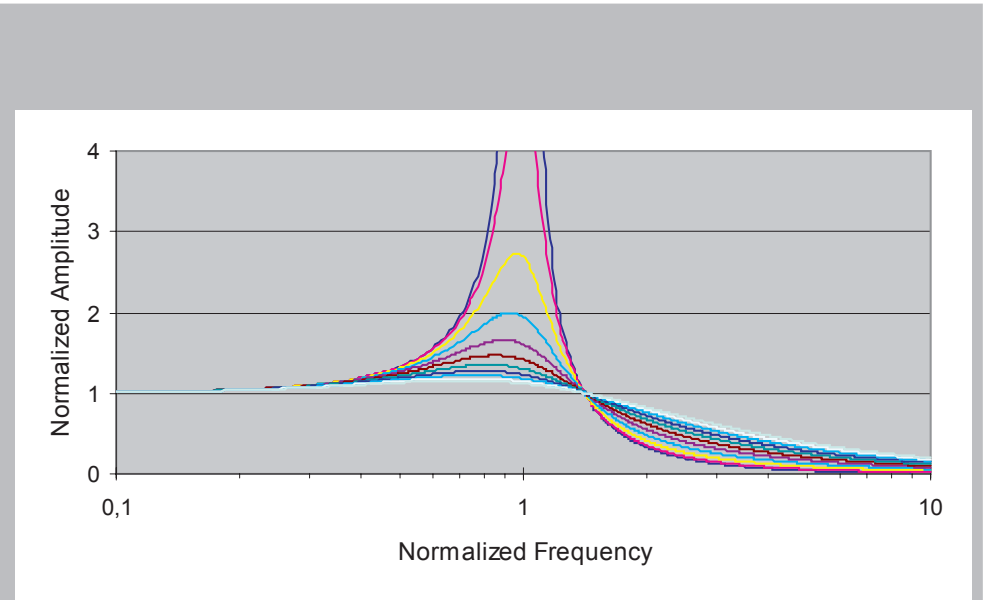
Horizontal

$$\nu_0 = \frac{1}{2\pi} \sqrt{\frac{3\pi E R^4}{4 \ell^3 m}}$$

$\ell = 100 \text{ mm}$
 $E = 2,1 \cdot 10^{11} \frac{\text{N}}{\text{m}^2}$
 $R = 18 \text{ mm (H36)}$
 $m = 2500 \text{ kg}$
 $\nu_0 = 23 \text{ Hz}$

Vertical

$$\nu_0 = \frac{1}{2\pi} \sqrt{\frac{\pi E \ell^2}{\ell m}} = 142 \text{ Hz}$$



Transfer function of a mass spring system.