

In the hard x-ray region, a 4-bend crystal monochromator is used to measure the FEL spectra around 8 keV by scanning the electron energy (hence the measurement is multi-shot instead of single-shot). For examples, the left plot of Figure below shows the FEL spectra when the electron beam is under-compressed in BC2 for several peak current values. The right plot shows the FEL spectra when the electron beam is over-compressed in BC2 (indicated by negative peak current values) and clearly demonstrate the spectral broadening effect due to the electron energy chirp.

