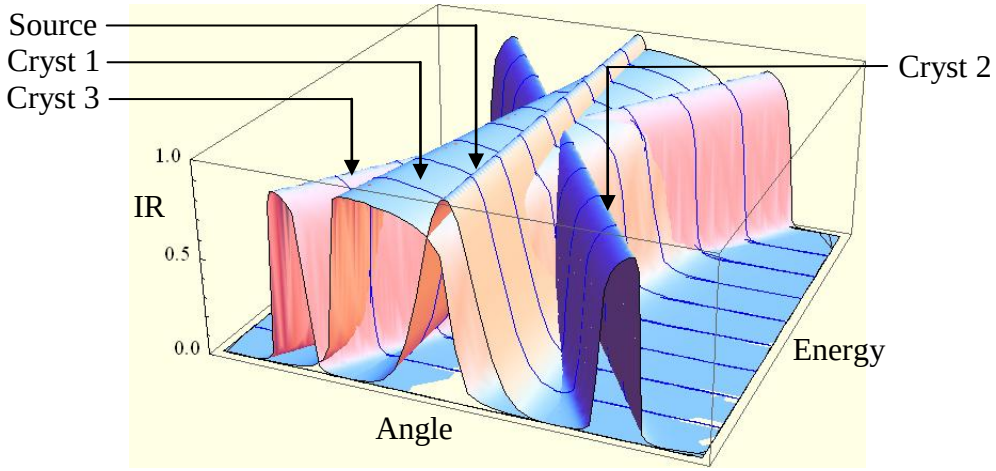
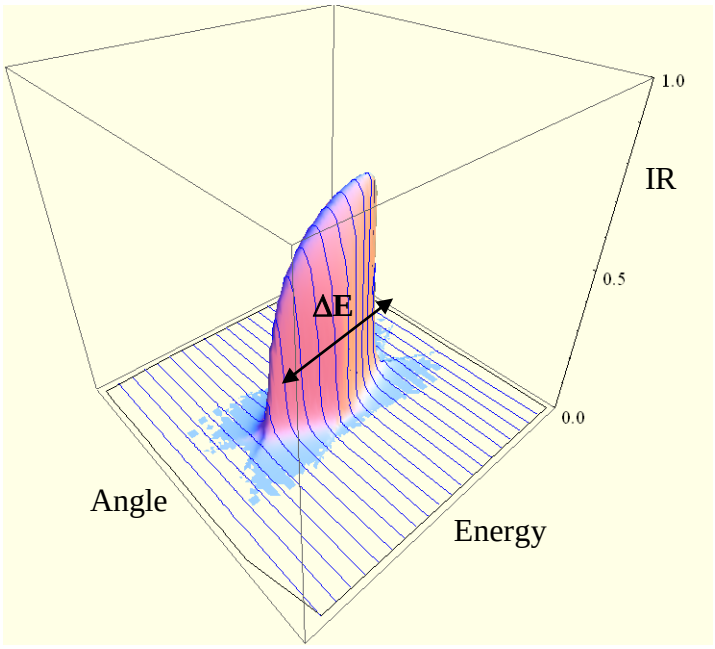
Tables

The bandpass- and throughput data in the monochromator tables were compiled by superposing a Gaussian source distribution (see below) and all pertinent dynamical crystal reflectivities. The resulting intensity profile is then numerically integrated over angle and energy.



Source distribution and crystal reflectivities as functions of angle and energy



Intensity profile as a function of angle and energy, resulting from superposition of source distribution and crystal reflectivities

Source Parameters

Monochromator tables are based on a typical vertical source distibution for an undulator beamline at the Advanced Photon Source of Argonne Nat'l Laboratory.

Pertinent parameters are

Undulator Length:

$$L_u = 4.8m$$

Electron beam divergence, vertical:

$$\sigma_y^{'} = 3.3\mu rad$$

Photon beam divergence, vertical, incident energy E_i :

$$\sigma_r^{'} = \sqrt{hc / E_i L_u}$$

Combined beam divergence, vertical:

$$\Sigma_y^{'} = \sqrt{\sigma_y^{'2} + \sigma_r^{'2}}$$

Gaussian angular source distribution:

$$G(\theta) = e^{-\theta^2 / 2\Sigma_y^2}$$