Dialog prototype.

Will be used by users to control beamline and analyzer and to set desired energy and resolution.

Beamline

Beamline Enegy, eV	735.01	Request energy	Set
Harmonic	1st	Harmonic ▼	Set
Exit slit, μ	20	Request slit	Set
Beamline resolution, meV	205	Request resolution	Set

Analyzer

Analyzer slit, mm	0.8	Select slit ▼	Set
Pass Energy, eV	50	select pass energy ▼	Set
Analyzer resolution, meV	160	Request resolution	Set

Combined resolution, meV	302

First column: parameter name
Second column: current value
Third column: input new value. Could be input field or drop-down menu
Fourth column: button to request new values

Parameter description:

Beamline energy: float number between 250 and 2400
Harmonic: string. One of the following values ["1st","3rd"]
Exit slit: float point between -5 and 500
Beamline resolution: int higher than 0
Analyzer slit: string or int. one of the following values: ["1.5", "0.8", "0.4", "0.2"]
Pass energy: string or int. one of the following values: [1, 2, 5, 10, 20, 50, 100, 200]
Analyzer resolution : int more than 0
Combined resolution: int more than 0.

Logic:
1. Validate input
2. Switch harmonic to 1st if select beamline energy 1200 and below and to 3rd when set beamline energy above 1200.

3. When the new exit slit is set, calculate and update beamline resolution based on selected beamline energy and input exit slit. Use lookup table from below to do approximation.
4. When the new beamline resolution is set, calculate and set exit slit based on the beamline energy and input resolution. Use same lookup table as for logic 4
5. When the new pass energy is set, calculate analyzer resolution based on the analyzer slit and input pass energy using following formula: $dE=PE*d/300$, where dE is analyzer resolution, d is analyzer slit, and PE is pass energy
6. When the new analyzer resolution in set, calculate and update pass energy using same formula as in point 5.
7. When either beamline or analyzer resolution value is changed, calculate and update combined resolution value using following formula: $R=SQRT(RB^2 + RA^2)$, where R is combined resolution, RB is beamline resolution, and RA is analyzer resolution.

Lookup table for beamline energy calibration
the listed parameter, R, is a resolving power: $R=E/dE$, where E is the beamline energy, and dE is the beamline resolution
use linear (or any other you find useful) extrapolation for points in the middle. For slit below 10, use constant resolving power 30000.

Exit slit	R
150	3500
100	4500
80	5000
60	7500
40	10500
20	16000
10	30000