Guides

The exercise starts with the `Exercise_guides.instr` file, it contains a source, straight guide and relevant monitors. It already has an instrument parameter for controlling the length of the guide. Solutions are available in `solution/Exercise_solution_straight.instr` and `solution/Exercise_solution_elliptic.instr`.

TASKS

- Task 1
  - Compare output for two different guide lengths (e.g. triple the length)
- Task 2
  - Introduce a parameter that control width of the guide (default 3 cm)
  - Compare two runs with different guide widths (e.g. half and double the width)
- OPTIONAL Task 3
  - Check how much gravity impacts the output (set `G` to 0 and Jupyter `2.528*G`)
- OPTIONAL Task 4 (optional)
  - Exchange the last 20% of the guide with an elliptic nose.
  - See the geometry with `mcdisplay` (3D view)
  - Identify how the resulting beam has changed

HINTS

- Use a scan in McStas to run two simulations with different guide lengths and compare
  - Set steps to 2 and in the field for `guide_length` have for example 5,15
  - The display will show the evolution in intensity on the monitor
- When adding a guide_width, remember to adjust the focusing of the source
- To add the elliptic nose use Elliptic_guide_gravity
- `mcdoc Elliptic_guide_gravity`

INTERPRETATION

The geometry of the guide heavily impacts the quality of the delivered beam.

EXTRA

Investigate how the m value impacts the beam delivered by the guide.