Ex. 5, a complete instrument

Retrieve the instrumentfile Ex_5.instr from the website

Edit the instrumentfile, removing monitors.

Insert an Arm instead:

```
COMPONENT Arm3 = Arm()
AT (0,0,1) RELATIVE Arm2
EXTEND %{
    flag_env = 0;
    flag_sample = 0;
%}
```

Paste the relevant sections of the instrumentfile from Exercise 3:

- Insert sample and sample environment
- The “string sample=.... “ input parameter
- DECLARE section with flags and
- Add relevant EXTEND section of the Origin component

Put the sample and sample environment AT (0, 0, 0) RELATIVE Arm3

1) Perform a TRACE and a simulation, to retrieve results similiar to Exercise 3 (Will require a higher ncount to achieve similar quality data)

(If a long simulation time - 15 minutes + - is required, this could be a good time for coffee...)

Info: To reduce simulation time in the following task, change your Arm3 to:

```
SPLIT 10 COMPONENT Arm3 = Arm()
AT (0,0,1) RELATIVE Arm2
EXTEND %{
    flag_env = 0;
    flag_sample = 0;
%}
```

(explanation will be given by organisers)

2) Using the component manual (Help (McDoc) - Component manual, page 113), adjust the options="" string to record a (2θ,I) dataset (a powder pattern) of good quality (n=1e7 or more).

Also append the word "parallel" to your options string.

3) Vary the monochromator vertical radius of curvature (e.g. 0.5-3.5m) and observe the effect on the powder patterns .

Based on the integrated intensity (and line shapes), pick an optimal curvature

4) Optional exercises:

Insert a radial collimator between sample and detector (using pen/paper, choose the relevant divergence/geometry)

Insert a beamstop to remove the direct beam. (Where should it be put in the instrumentfile?)