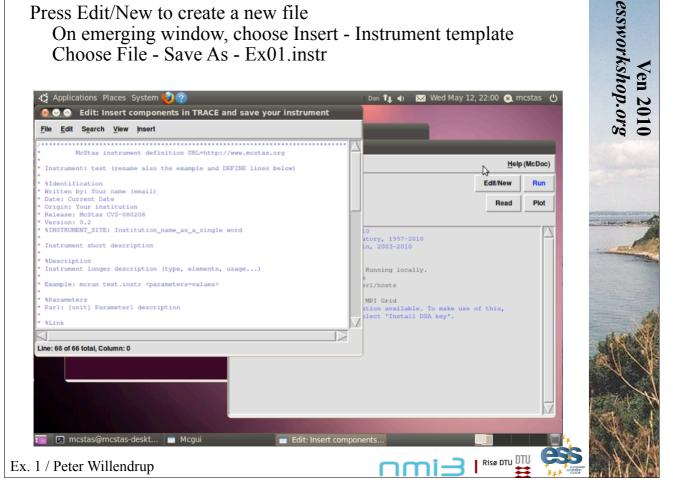
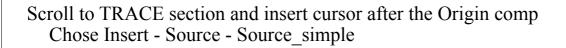


Press Edit/New to create a new file On emerging window, choose Insert - Instrument template Choose File - Save As - Ex01.instr

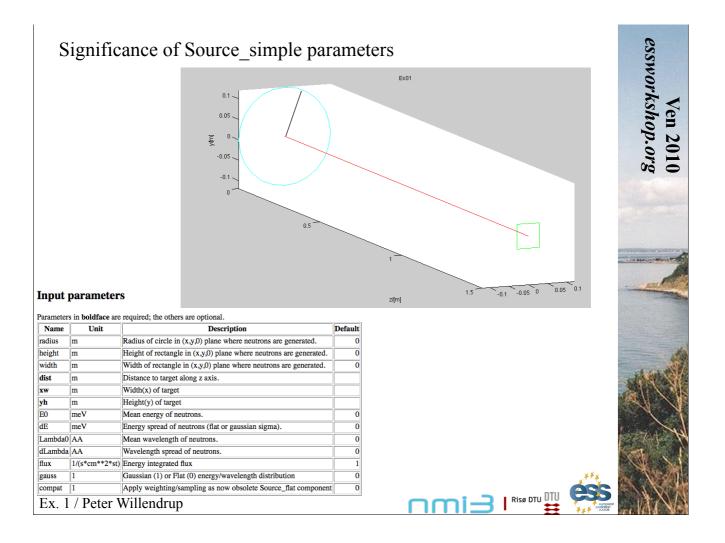


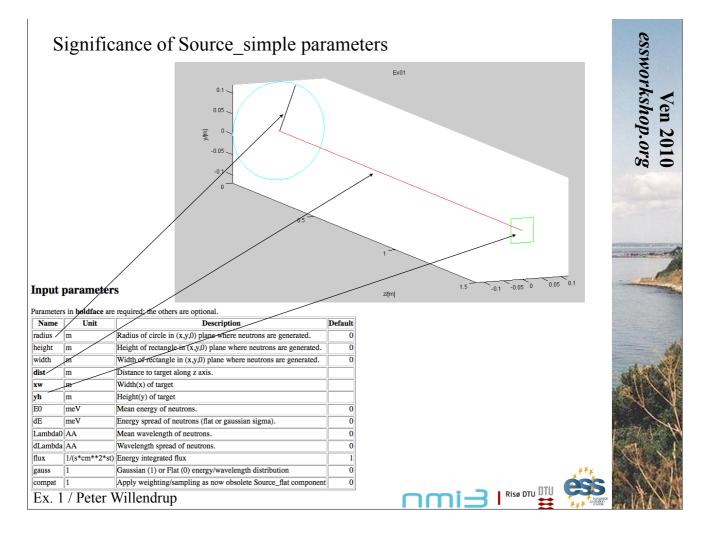
McStas instrument definition URL=http://www.mcstas.org trument: test (rename also the example and DEFINE lines below) entification tten by: Your name (email) e: Current Date gin: Your institution ease: McStas CVS-080208 sion: 0.2 STRUMENT_SITE: Institution_name_as_a_single word trument short description trument longer description (type, elements, usage) mple: mcrun test.instr <parameters=values></parameters=values>	e Edit Search <u>V</u> iew Insert		essworkshop.org
McStas instrument definition URL=http://www.mcstas.org trument: test (rename also the example and DEFINE lines below) entification tten by: Your name (email) e: Current Date gin: Your institution ease: McStas CVS-080208 sion: 0.2 STRUMENT_SITE: Institution_name_as_a_single word trument short description trument longer description (type, elements, usage) mple: mcrun test.instr <parameters=values></parameters=values>			
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tten by: Your name (email) e: Current Date gin: Your institution ease: McStas CVS-080208 sion: 0.2 STRUMENT_SITE: Institution_name_as_a_single word trument short description scription trument longer description (type, elements, usage) mple: mcrun test.instr <parameters=values> Running locally. *r1/hosts</parameters=values>	nstrument: test (rename also the example and DEFINE lines below)		IcDoc)
gin: Your institution ease: McStas CVS-080208 ion: 0.2 STRUMENT_SITE: Institution_name_as_a_single word trument short description scription trument longer description (type, elements, usage) mple: mcrun test.instr <pre>parameters=values></pre>	Identification ritten by: Your name (email)	Edit/New	Run
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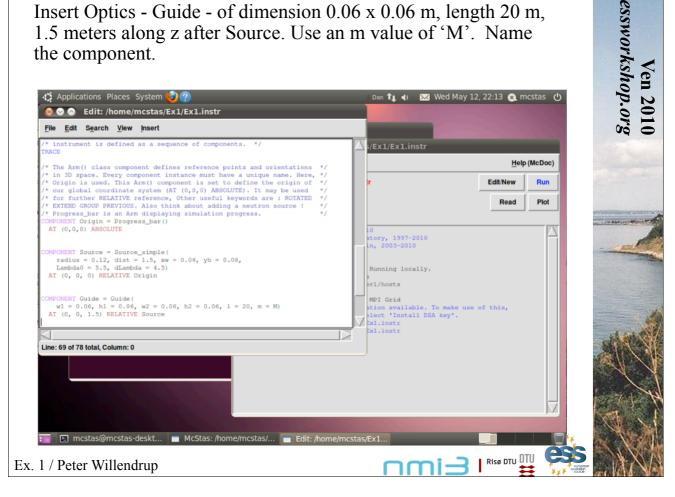
Applications Places	System 🥑 ?? Dan Dan Dan Dan Dan	1 ↓ ◀) 🖂 Wed May 1:	2, 22:04 💌 m	ncstas 🕐
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in fan stren Ten	🛞 📀 📀 Source_simple			
	Component definition: Source_simple			
Here comes the TRACE s instrument is defined	A circular neutron source with flat energy spectrum and arbitrary flux		<u>H</u> elp	(McDoc)
ACE	Author: Kim Lefmann	Date: October 30, 1997	Edit/New	Run
The Arm() class compon in 3D space. Every com	Origin: Risoe			
Origin is used. This A	Instance name:		Read	Plot
' our global coordinate ' for further RELATIVE r	DESCRIPTION: (read it and fill-in PARAMETERS section below)			
<pre>* EXTEND GROUP PREVIOUS. * Progress_bar is an Arm >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>></pre>	The routine is a circular neutron source, which aims at a squar centered at the beam (in order to improve MC-acceptance rate). divergence is then given by the dimensions of the target. The neutron energy is uniformly distributed between EO-dE and E This component replaces Source_flat, Source_flat_lambda,	The angular		
* This section is execut * optional sections are INALLY	Source_flux and Source_flux_lambda. Example: Source_simple(radius=0.1, dist=2, xw=.1, yh=.1, E0=14,		of this,	
* The END token marks th	Character type parameters usually require quoting, e.g. filenam			
ne: 59 of 68 total, Column: 0	radius: [m] (OPTIONAL, default 0) Radius of circle in (x,y,0) plane where neutrons are generated.			
	AT (, , ,) RELATIVE ROTATED (, ,) RELATIVE			
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instrument is defined	A circular neutron source with hat energy spectrum and arbitrary hit	A	He	lp (McDoc)
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This section is execut optional sections are	Mean wavelength of neutrons.			
VALLY				
	dLambda: 4.5 [AA] (OPTIONAL, default 0)		se of this,	
The END token marks th	Wavelength spread of neutrons.			
e: 59 of 68 total, Column: 0	flux: [1/(s*cm**2*st)] (OPTIONAL, default 1)	1		
	Energy integrated flux		-	
	AT (0 , 0 , 0) RELATIVE Origin	-		
	ROTATED (, ,) RELATIVE			
				5752





Insert Optics - Guide - of dimension 0.06 x 0.06 m, length 20 m, 1.5 meters along z after Source. Use an m value of 'M'. Name the component.



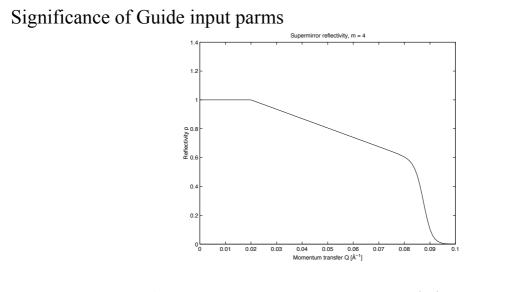


Figure 5.1: A typical reflectivity curve for a supermirror, Eq. (5.2). The used values are $m = 4, R_0 = 1, Q_c = 0.02 \text{ Å}^{-1}, \alpha = 6.49 \text{ Å}, W = 1/300 \text{ Å}^{-1}.$ Input parameters

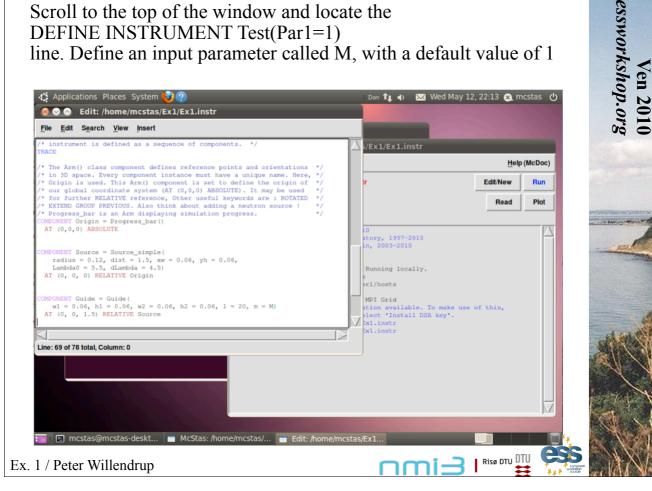
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Name	Unit	Description	Default
reflect	str	Reflectivity file name. Format [q(Angs-1) R(0-1)]	0
w1	m	Width at the guide entry	
h1	m	Height at the guide entry	
w2	m	Width at the guide exit	
h2	m	Height at the guide exit	
1	m	length of guide	
R0	1	Low-angle reflectivity	0.99
Qc	AA-1	Critical scattering vector	0.0219
alpha	AA	Slope of reflectivity	6.07
m	1	m-value of material. Zero means completely absorbing.	2
W	AA-1	Width of supermirror cut-off	0.003

Ex. 1 / Peter Willendrup

Scroll to the top of the window and locate the DEFINE INSTRUMENT Test(Par1=1) line. Define an input parameter called M, with a default value of 1



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🥺 📀 📀 🛛 Edit: /home/mcstas/Ex1/Ex1.instr			
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%Link A reference/HTML link for more information	A;/Ex1/Ex1.instr		
Send		<u>H</u> elp	p (McDoc)
	·*/	Edit/New	Bun
* Change name of instrument and input parameters with default values */ EFINE INSTRUMENT test(M=1)	_	Read	Plot
* The DECLARE section allows us to declare variables or small */ * functions in C syntax. These may be used in the whole instrument. */			
ECLARE * The INITIALIZE section is executed when the simulation starts */ * (C code). You may use them as component parameter values. */ NITIALIZE * Here comes the IRACE section, where the actual */ * instrument is defined as a sequence of components. */ RACE Ine: 31 of 78 total, Column: 0	lo tory, 1997-2010 in, 2003-2010 Running locally. %r1/hosts MPI Grid tion available. To mak tion available. To mak kt.instr kl.instr		
	I		

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Insert a PSD monitor of dimension $0.07 \ge 0.07$ m, define an output filename, AT (0,0,20.01) RELATIVE Guide

Insert a Divergence monitor of dimension $0.07 \ge 0.07$ m, define an output filename, maximum divergence 5 degrees in both directions. To be placed AT (0,0,0.01) RELATIVE PREVIOUS

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Press save

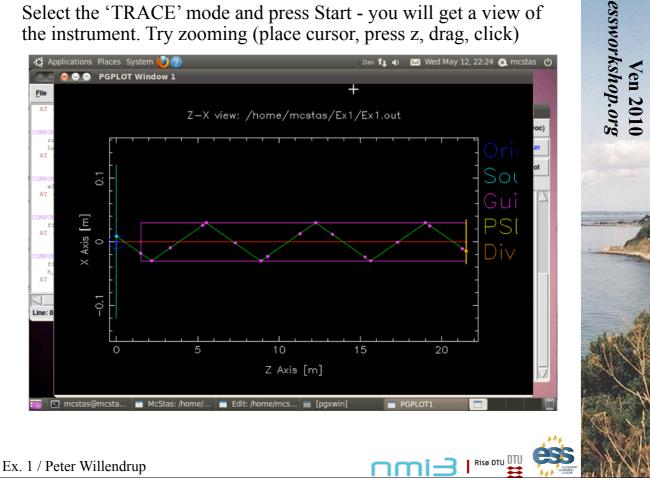
Go on the main window, press run, you should now get....

Ex. 1 / Peter Willendrup

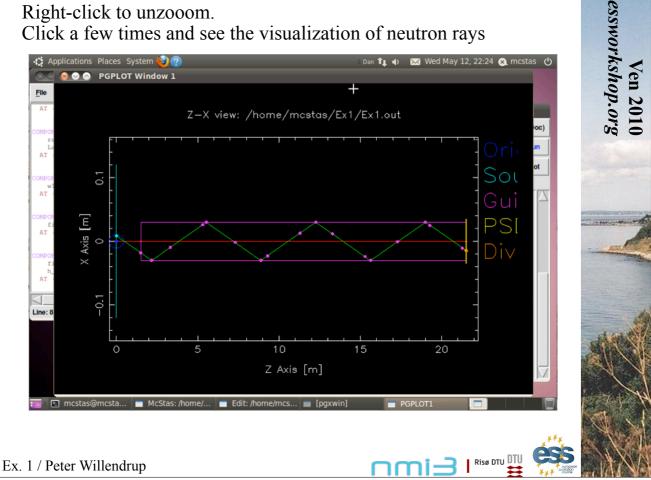
Insert a PSD monitor of dimension 0.07 x 0.07 m, define an output filename, AT (0,0,20.01) RELATIVE Guide

🛟 Applications Places System 😂 🥐 Dan 👣 🜗 🛛 🖂 Wed May 12, 22:22 😣 mcstas Edit: /home/mcstas/Ex1/Ex1.instr File Edit Search View Inser (0,0,0) ABSOLUTE McStas: /home/mcstas/Ex1/Ex1.instr 🛛 🔕 🛛 Run simulation /home/mcstas/Ex1/Ex1.instr Help (McDoc) CMPONENT Source = Source_sin radius = 0.12, dist = 1.5 Lambda0 = 5.5, dLambda = AT (0, 0, 0) RELATIVE Origi HTML docs e/mcstas/Ex1/Ex1.instr Edit/New Run F Instrument parameters (D=floating point, I=integer, S=string): Read Plot M (D): OMPONENT Guide = Guide (w1 = 0.06, h1 = 0.06, w2 AT (0, 0, 1.5) RELATIVE Sou _ force Browse. Neutron count: 1000000 gravity (BEWARE) Random seed: NT PSD = PSD_monitor(Simulate # steps: 0 Plot results, Format: PGPLOT filer ilename = "psd", xwidt
(0, 0, 20.01) RELATIVE 2 Clustering: None (single CPU) Number of nodes: OMPONENT Div = Divergence_m filename = "div", xwidth h_maxdiv = 5, v_maxdiv = AT (0, 0, 0.01) RELATIVE P Origin Source Origin Source Line: 80 of 89 total, Column: 0 Origin Source Start Cancel 🖸 mcstas@mcstas-deskt... 🗖 McStas: /home/mcstas/... Ex. 1 / Peter Willendrup

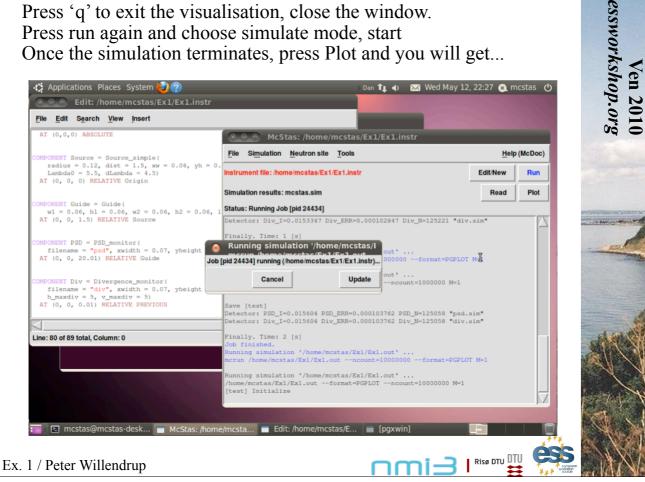
Select the 'TRACE' mode and press Start - you will get a view of the instrument. Try zooming (place cursor, press z, drag, click)



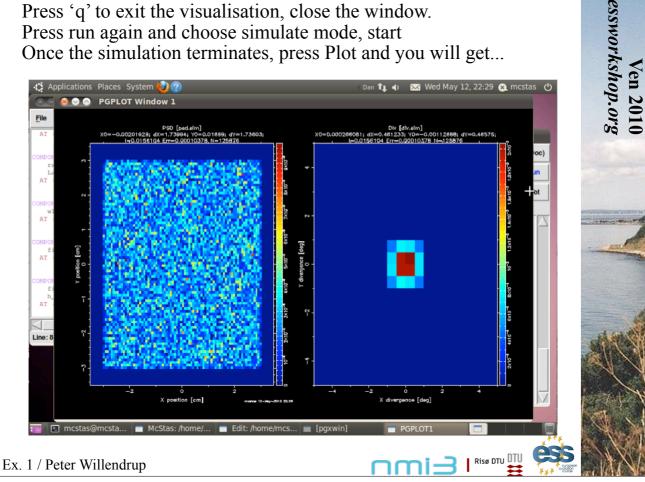
Right-click to unzooom. Click a few times and see the visualization of neutron rays



Press 'q' to exit the visualisation, close the window. Press run again and choose simulate mode, start Once the simulation terminates, press Plot and you will get...



Press 'q' to exit the visualisation, close the window. Press run again and choose simulate mode, start Once the simulation terminates, press Plot and you will get...



Clicking one of the panels will zoom that monitor, clicking again zoom out Shortcut keys:

Click on a plot for full-window view. Press key for hardcopy (in graphics window), 'Q' to quit 'P' BW postscript 'C' color postscript 'N' PNG file 'M' PPM file 'G' GIF file 'L' Toggle log10 plotting mode 'T' Toggle contour plotting mode 'Q' quit

Ex. 1 / Peter Willendrup

On the run dialogue, we will now:

1) Define an output directory (otherwise subsequent sims will overwrite results)

2) Perform a scan by

a) Setting 0,6 for the value of M

b) Fill the 'steps' field by the number 7

A series (7) of simulations will now run corresponding to:

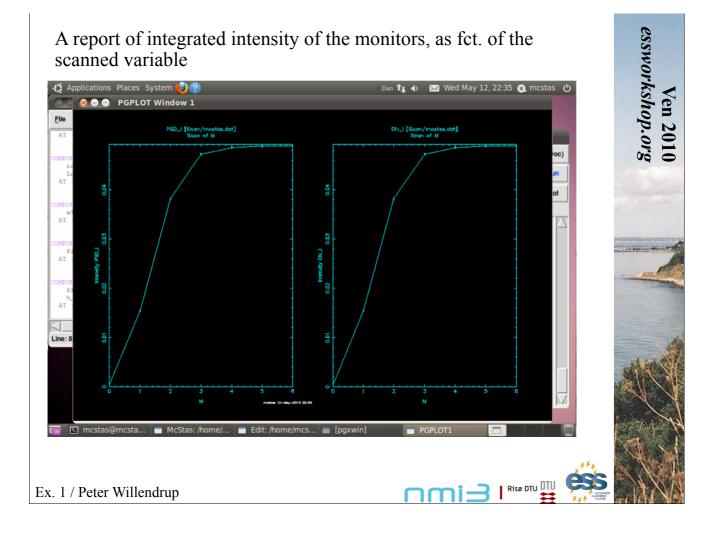
M=0 - simple, non-reflecting beamtube (absorbing walls) M=1,6 - Guide mirrors of increasing quality

After performing the scan, press Plot and you should get...



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Try using the Tools - Plot other results to compare the individual scan steps (browse to Scan/0, Scan/3, ...)

