

# Sandbox Results

February 8, 2012

## 1 The only Flux plot(s)

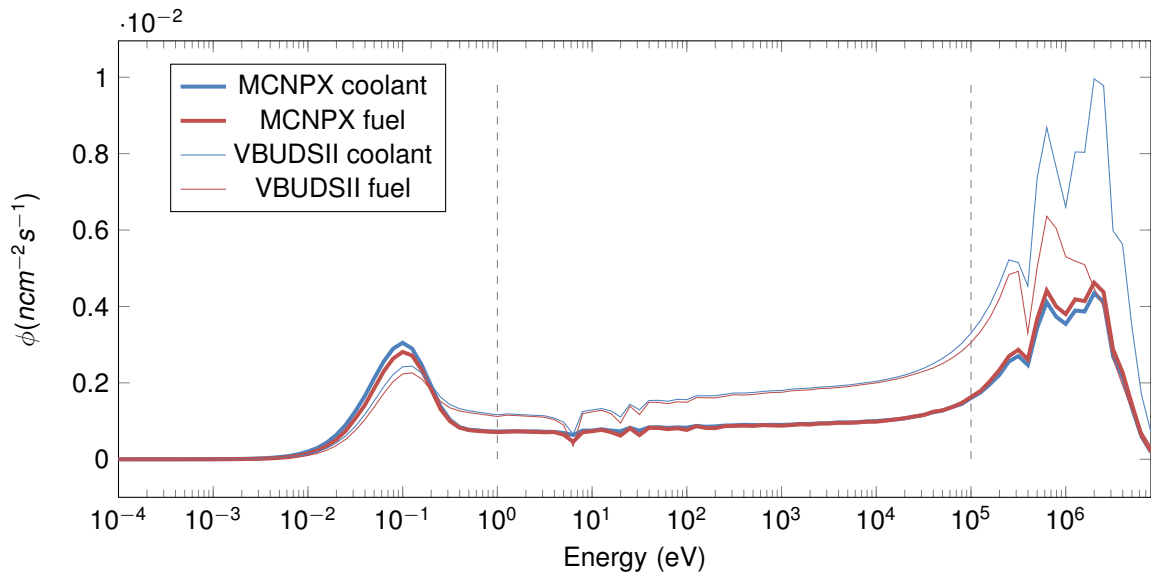


Figure 1: Energy dependent flux in both cells of the reactor, generated by MCNPX and VBUDSII.

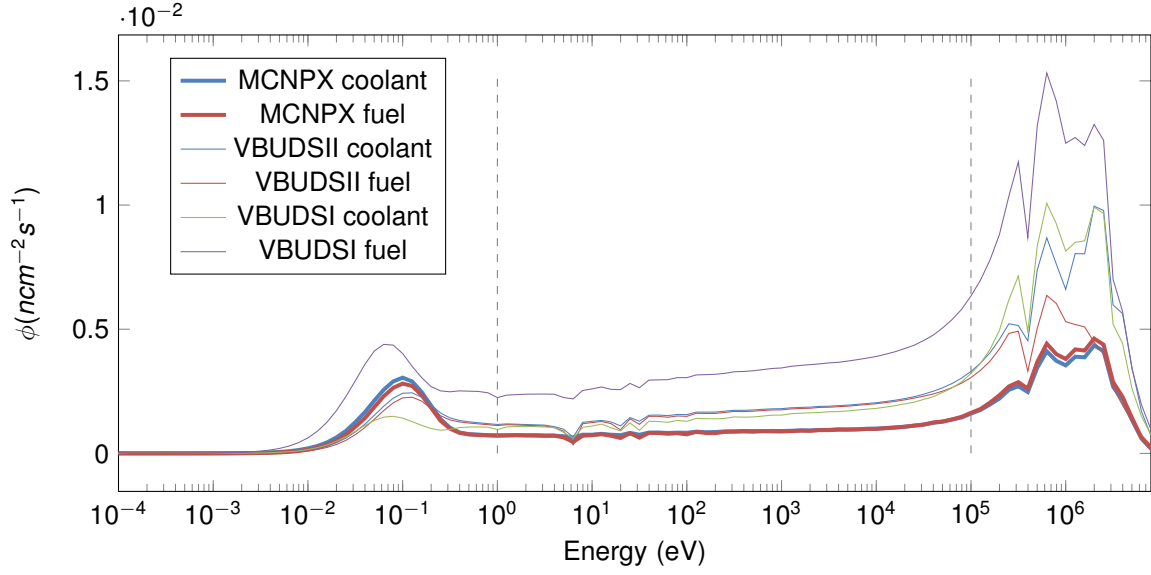


Figure 2: Energy dependent flux in both cells of the reactor, generated by MCNPX, VBUDSII and VBUDSI.

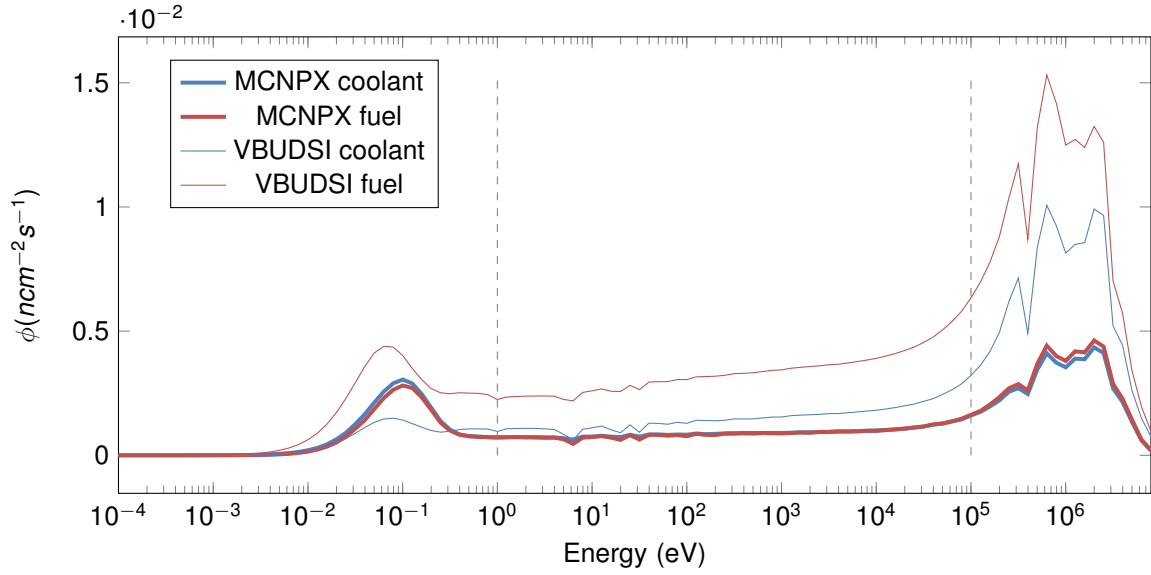


Figure 3: Energy dependent flux in both cells of the reactor, generated by MCNPX and VBUDSI.

## 1.1 Cross sections in cell H2O

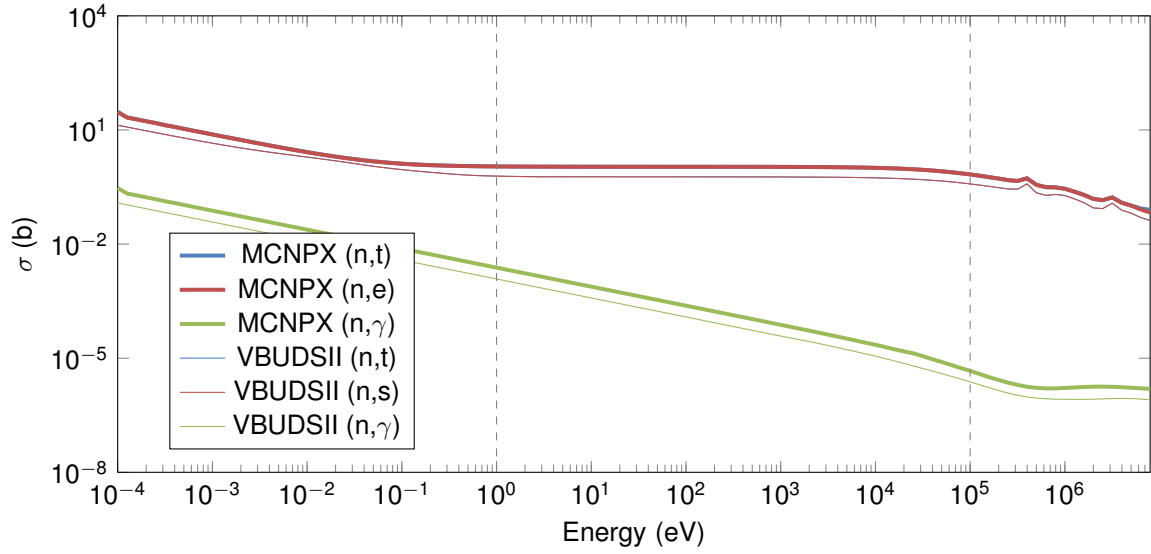


Figure 4: Energy-dependent cross sections for the H2O cell, generated by VBUDSII.

### 1.1.1 Cross sections in cell H2O, for ZAID 222

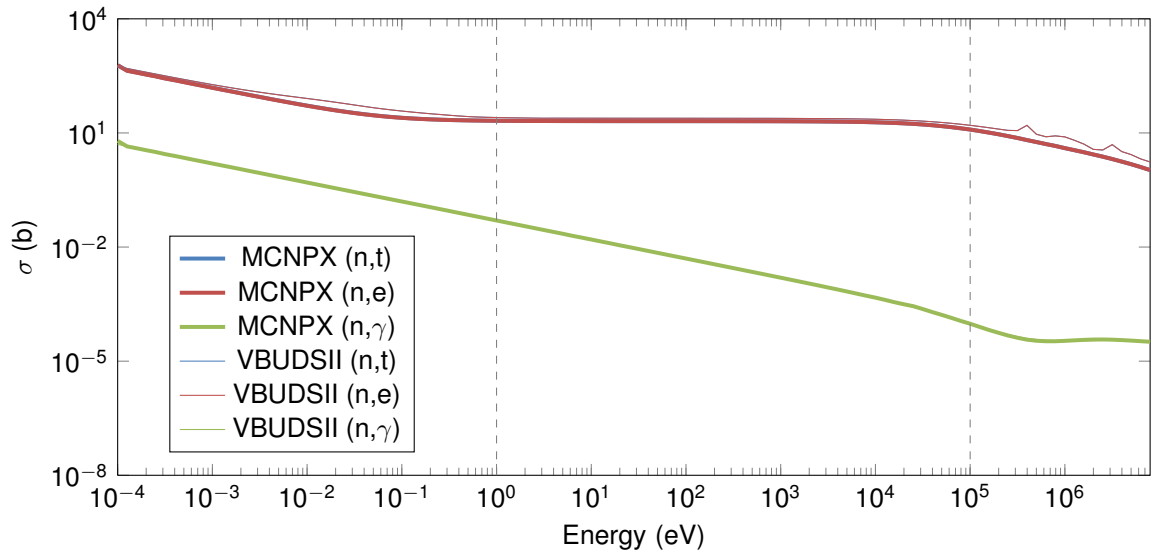


Figure 5: Energy-dependent cross sections in the H2O cell for ZAID 222, generated by both MCNPX and VBUDSII.

### 1.1.2 Cross sections in cell H2O, for ZAID 222, separated by reaction type

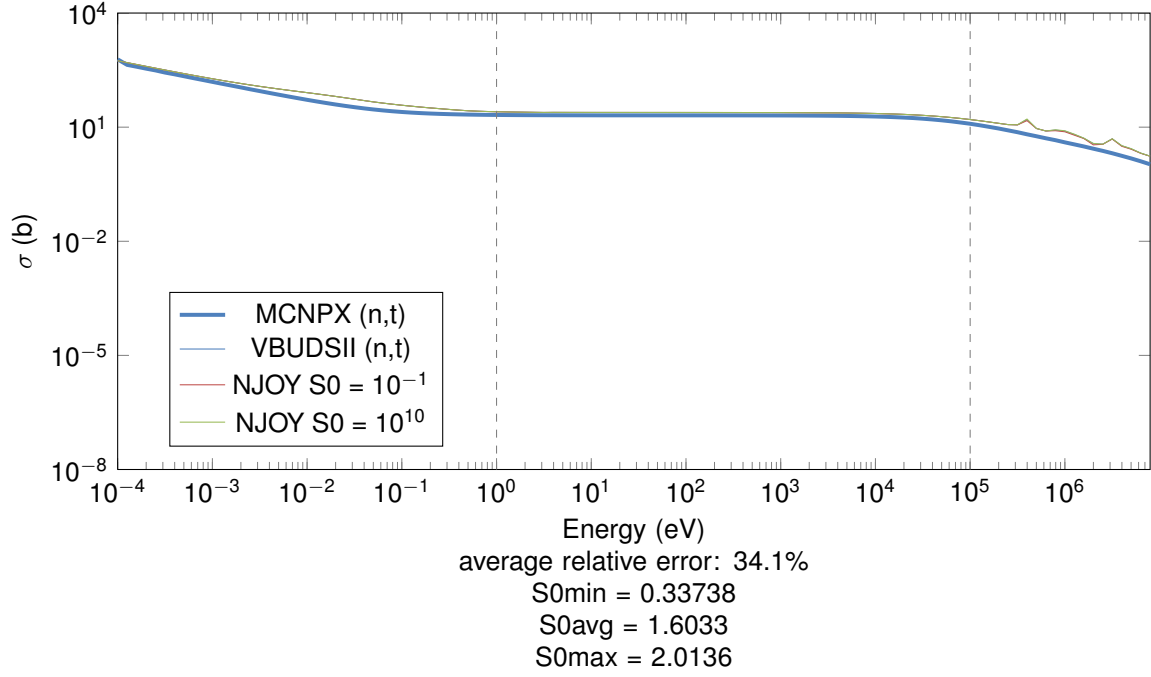


Figure 6: Energy-dependent cross sections in the H2O cell for ZAID 222 and MT 7, generated by both MCNPX and VBUDSII.

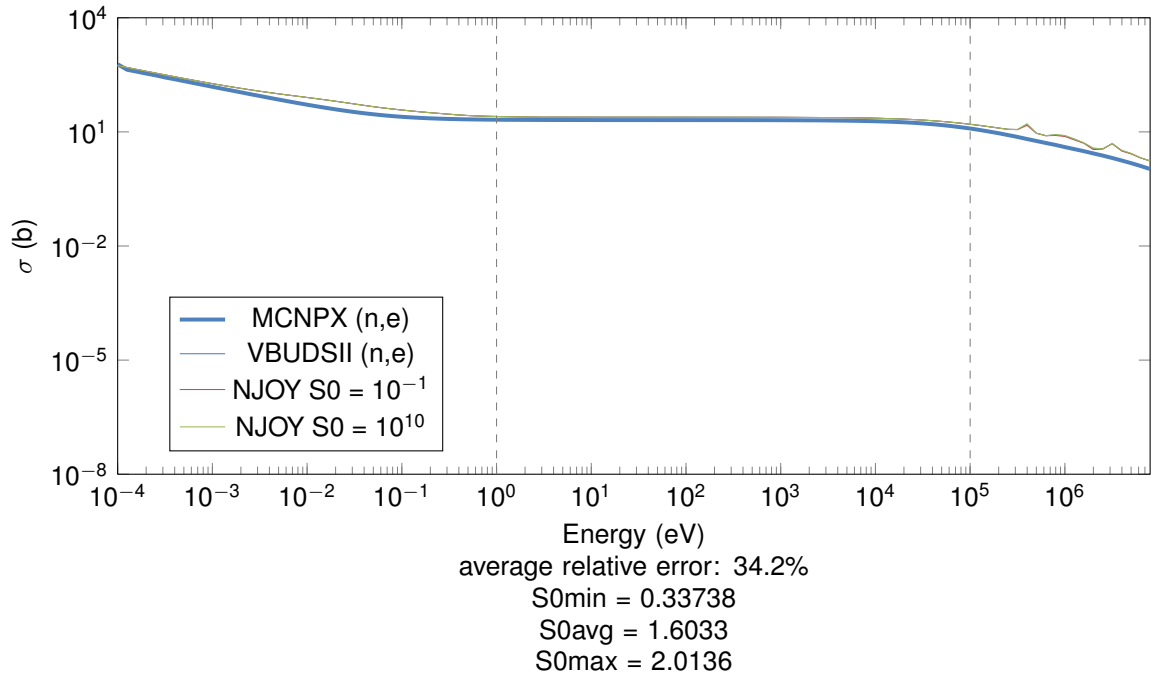


Figure 7: Energy-dependent cross sections in the H2O cell for ZAID 222 and MT 2, generated by both MCNPX and VBUDSII.

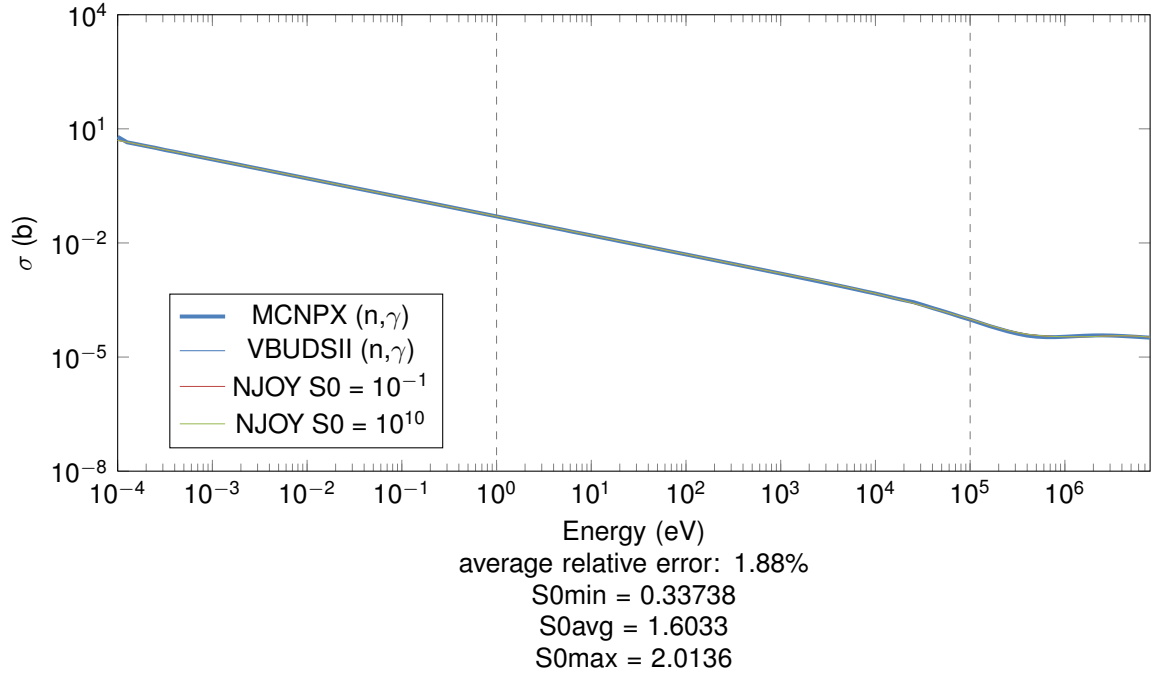


Figure 8: Energy-dependent cross sections in the H2O cell for ZAID 222 and MT 102, generated by both MCNPX and VBUDSII.

## 1.2 Cross sections in cell UO2

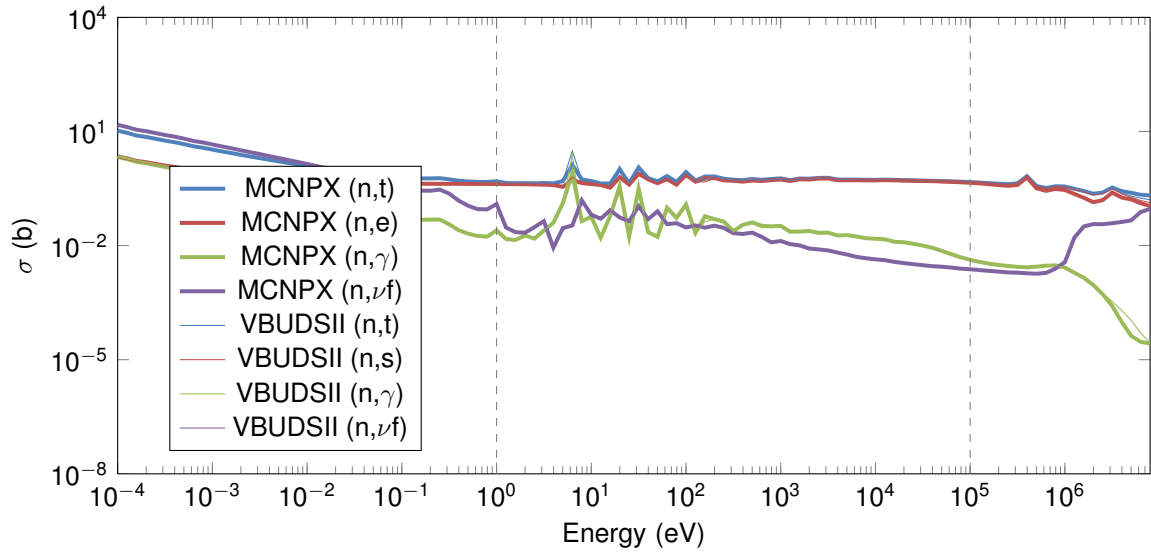


Figure 9: Energy-dependent cross sections for the UO2 cell, generated by VBUDSII.

### 1.2.1 Cross sections in cell UO2, for ZAID 92235

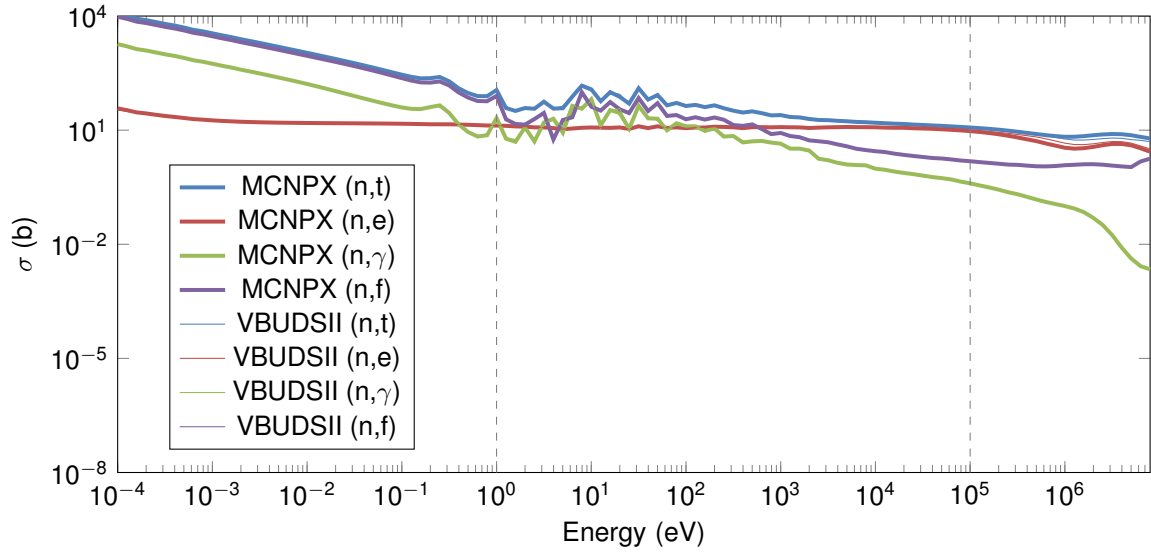


Figure 10: Energy-dependent cross sections in the UO2 cell for ZAID 92235, generated by both MCNPX and VBUDSII.

### 1.2.2 Cross sections in cell UO2, for ZAID 92235, separated by reaction type

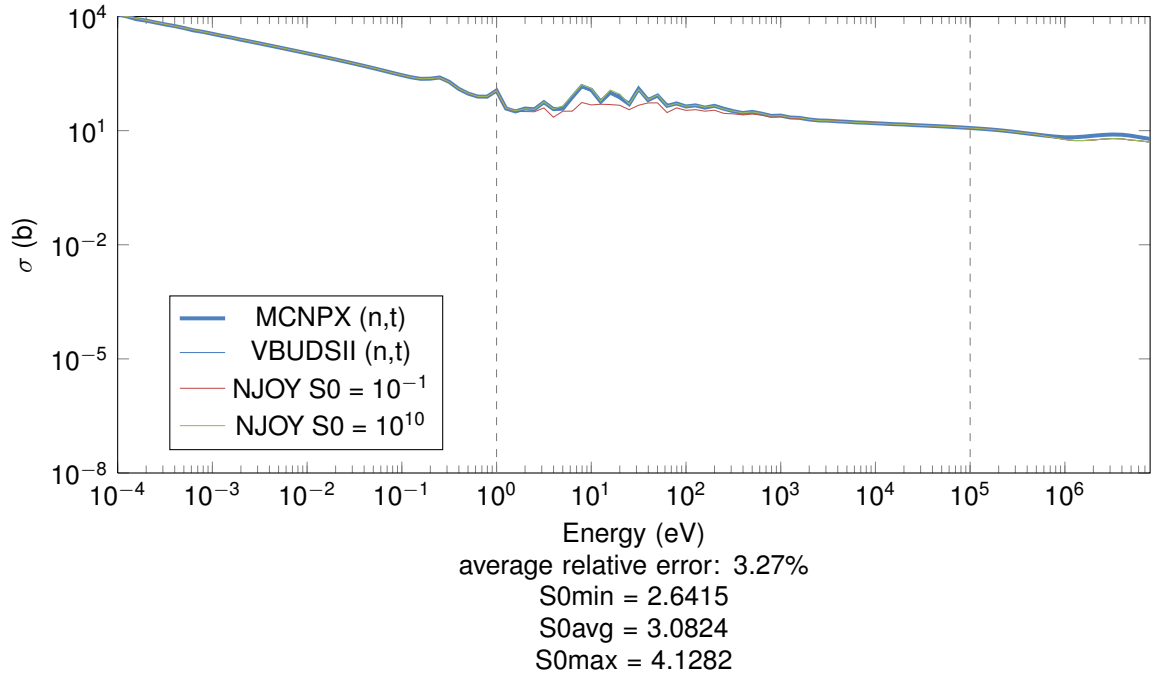


Figure 11: Energy-dependent cross sections in the UO2 cell for ZAID 92235 and MT 7, generated by both MCNPX and VBUDSII.

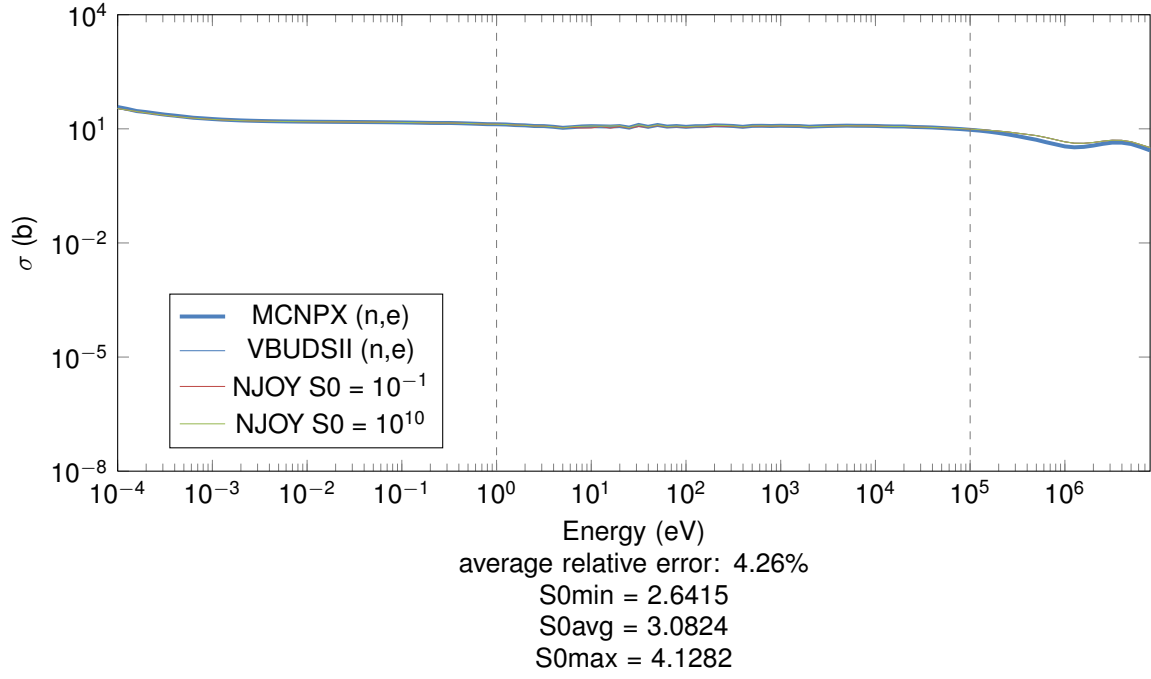


Figure 12: Energy-dependent cross sections in the UO2 cell for ZAIID 92235 and MT 2, generated by both MCNPX and VBUDSII.

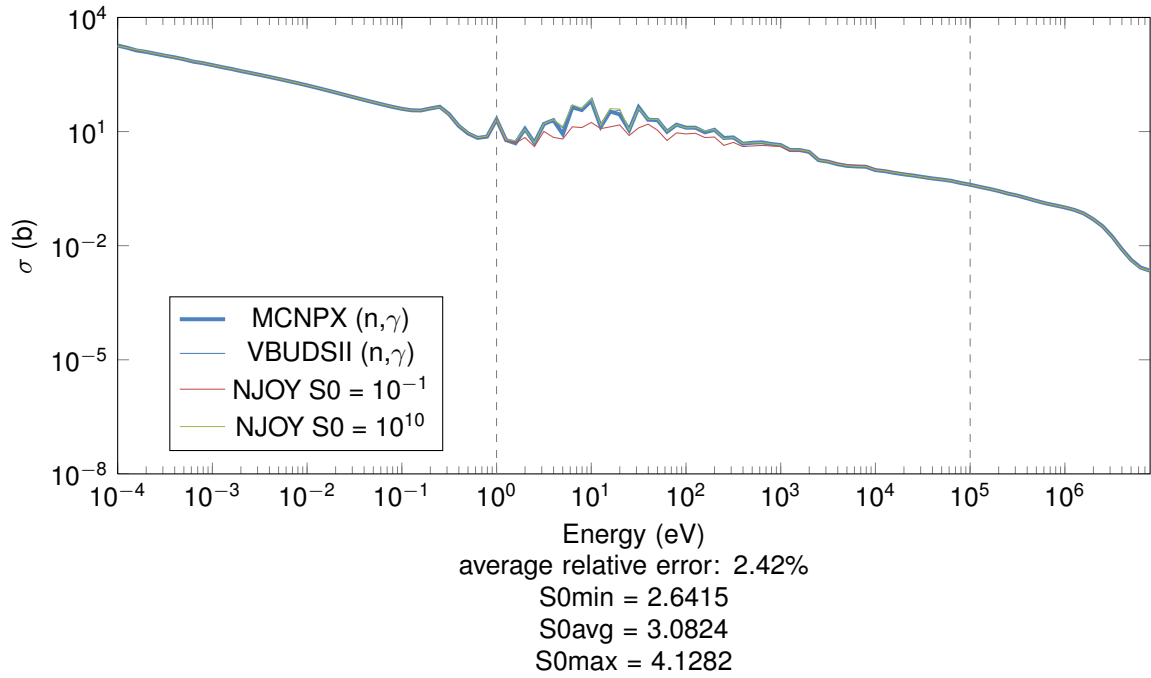


Figure 13: Energy-dependent cross sections in the UO2 cell for ZAIID 92235 and MT 102, generated by both MCNPX and VBUDSII.

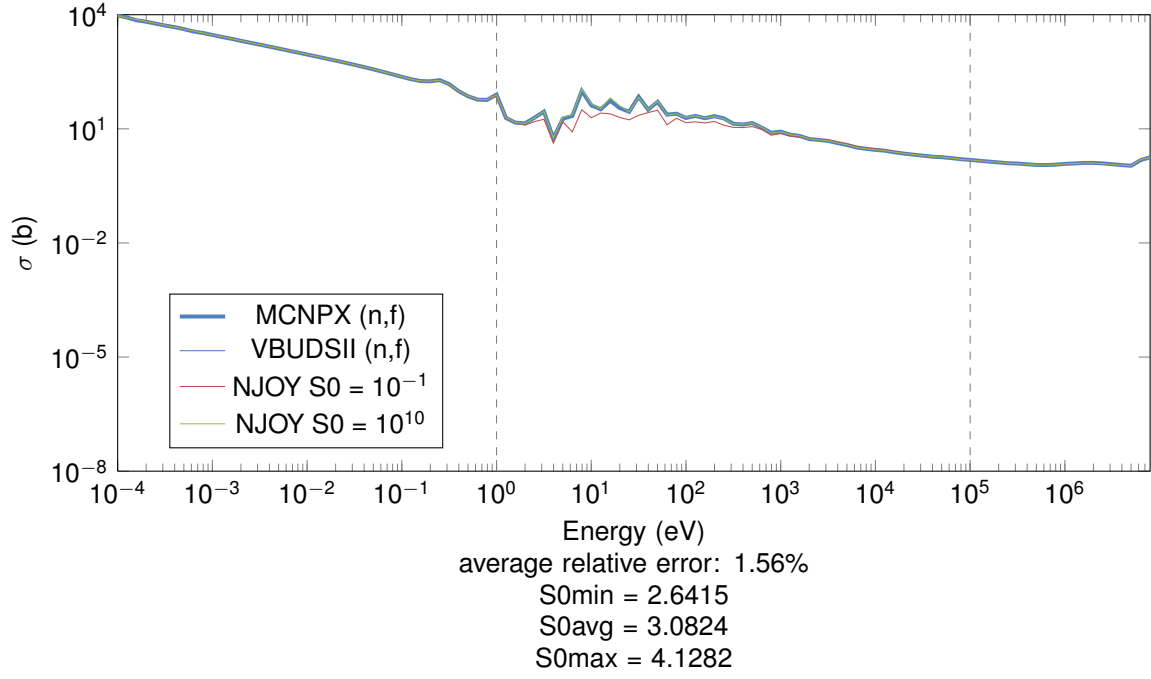


Figure 14: Energy-dependent cross sections in the UO2 cell for ZAIID 92235 and MT 18, generated by both MCNPX and VBUDSII.

### 1.2.3 Cross sections in cell UO2, for ZAIID 92238

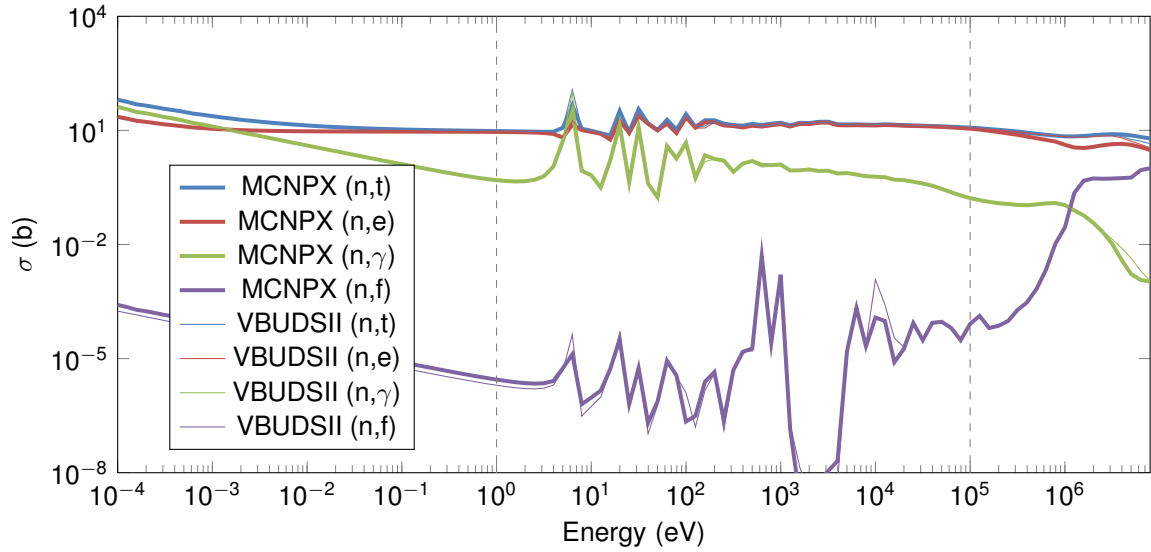


Figure 15: Energy-dependent cross sections in the UO2 cell for ZAIID 92238, generated by both MCNPX and VBUDSII.



#### 1.2.4 Cross sections in cell UO2, for ZAIID 92238, separated by reaction type

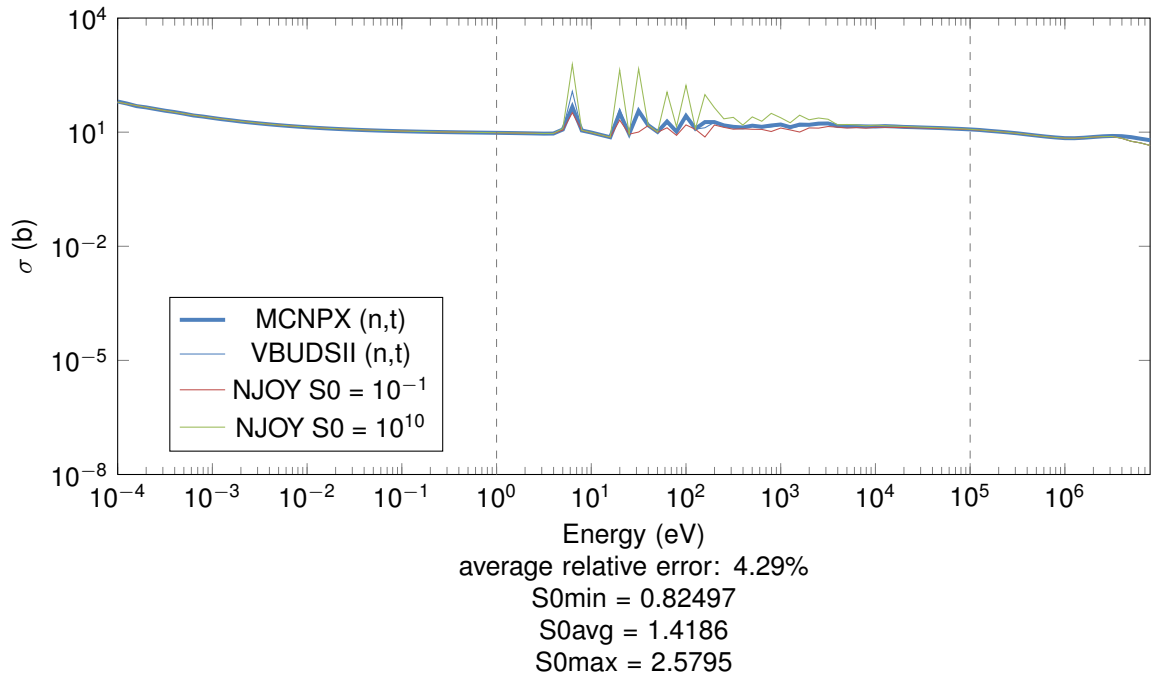


Figure 16: Energy-dependent cross sections in the UO2 cell for ZAIID 92238 and MT 7, generated by both MCNPX and VBUDSII.

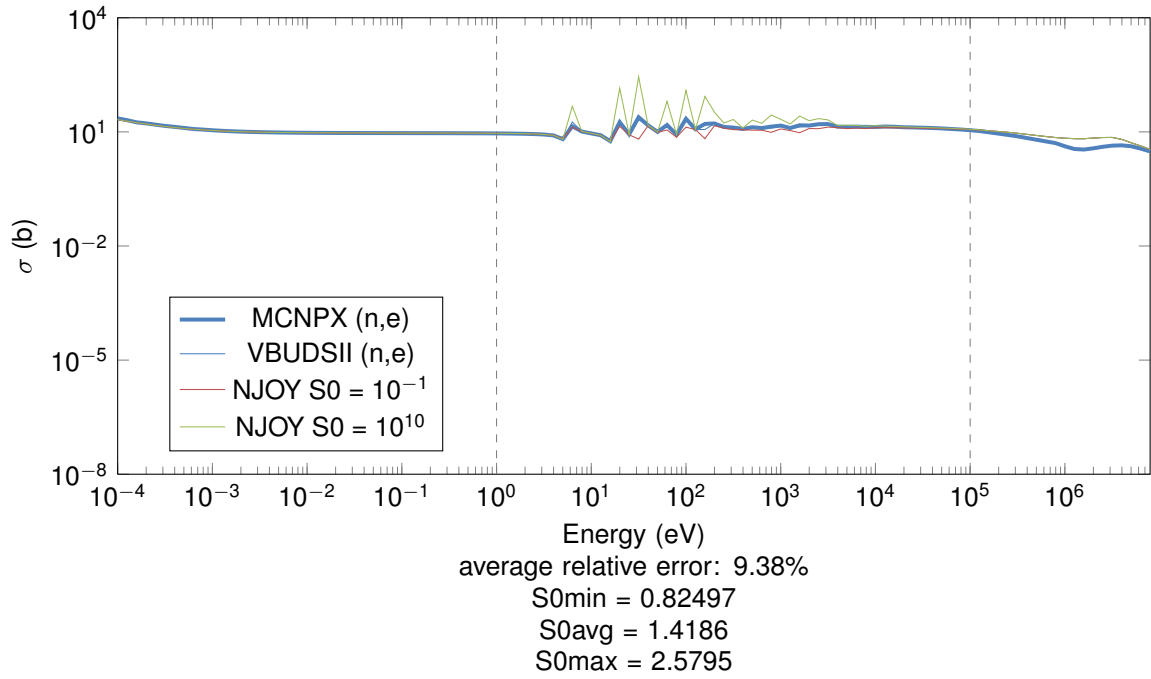


Figure 17: Energy-dependent cross sections in the UO2 cell for ZAIID 92238 and MT 2, generated by both MCNPX and VBUDSII.

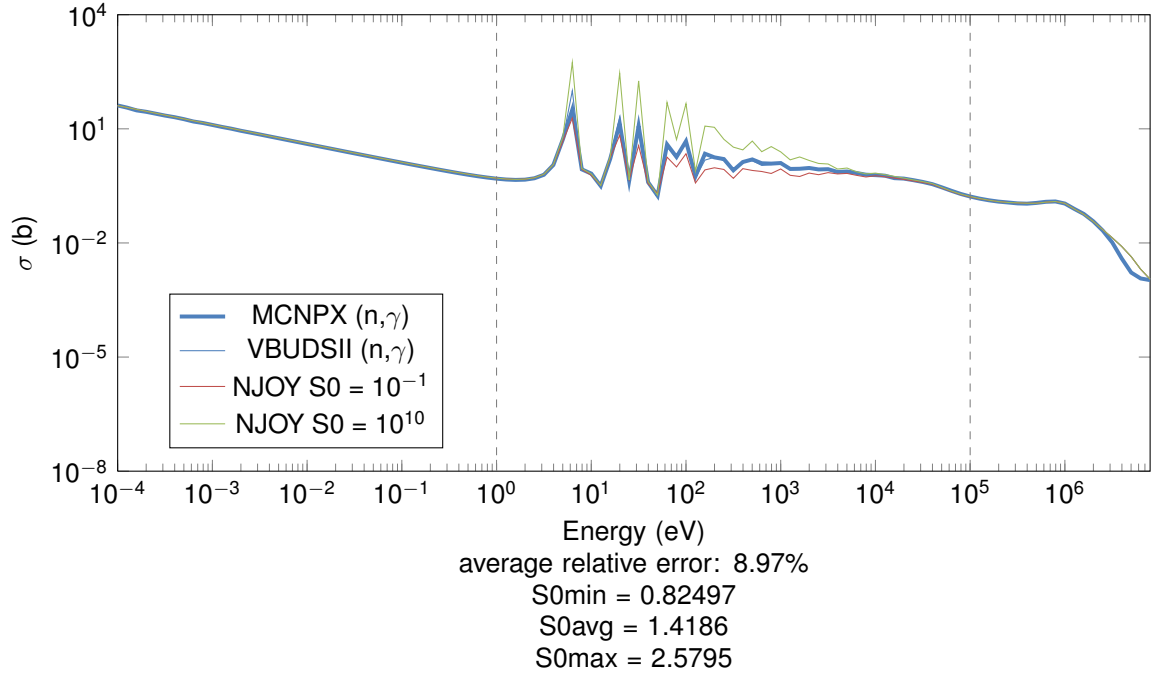


Figure 18: Energy-dependent cross sections in the UO2 cell for ZAIID 92238 and MT 102, generated by both MCNPX and VBUDSII.

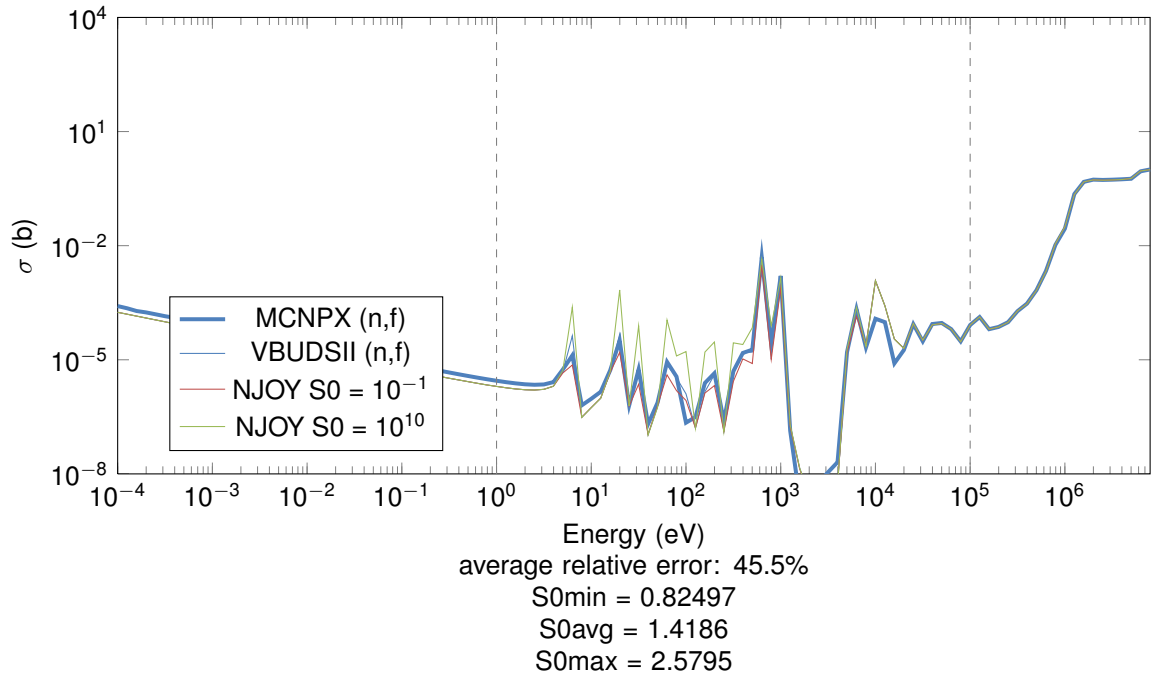


Figure 19: Energy-dependent cross sections in the UO2 cell for ZAIID 92238 and MT 18, generated by both MCNPX and VBUDSII.

### 1.2.5 Cross sections in cell UO2, for ZAID 8016

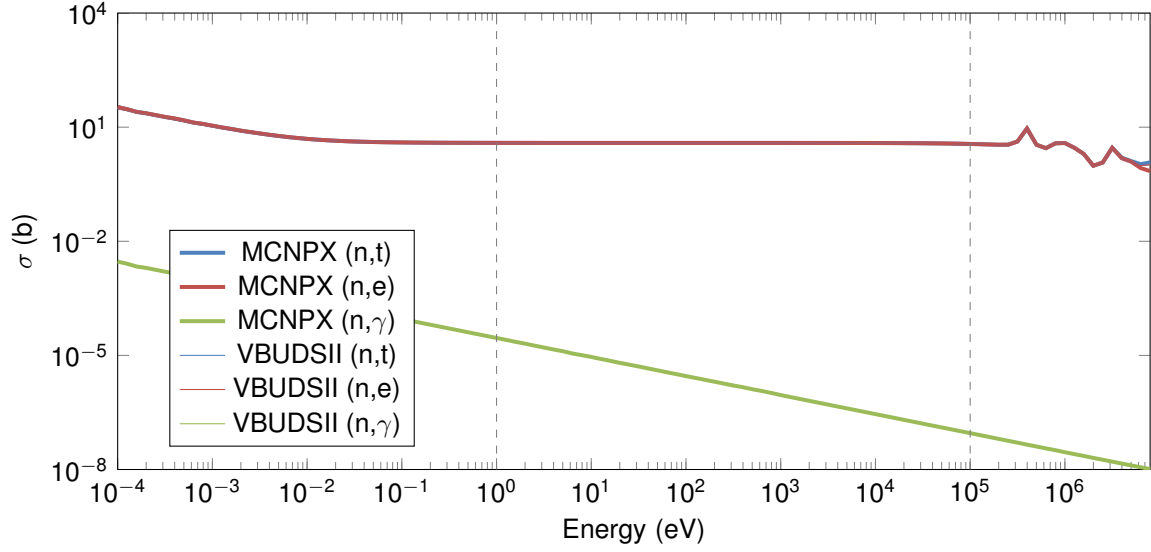


Figure 20: Energy-dependent cross sections in the UO2 cell for ZAID 8016, generated by both MCNPX and VBUDSII.

### 1.2.6 Cross sections in cell UO2, for ZAID 8016, separated by reaction type

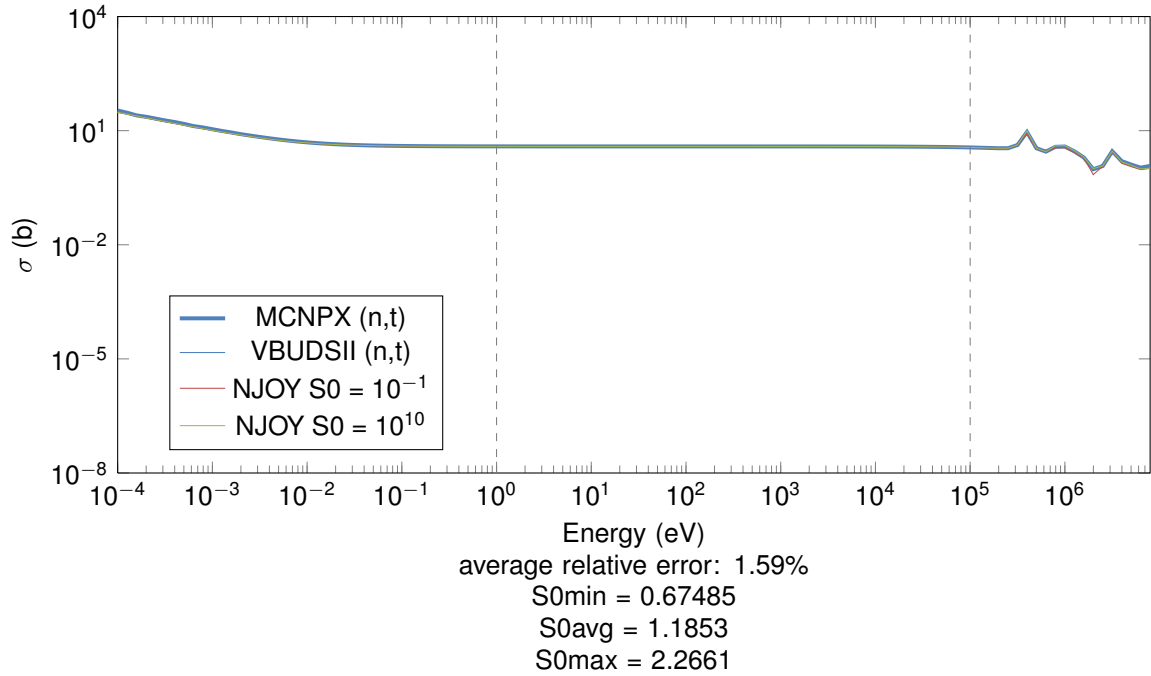


Figure 21: Energy-dependent cross sections in the UO2 cell for ZAID 8016 and MT 7, generated by both MCNPX and VBUDSII.

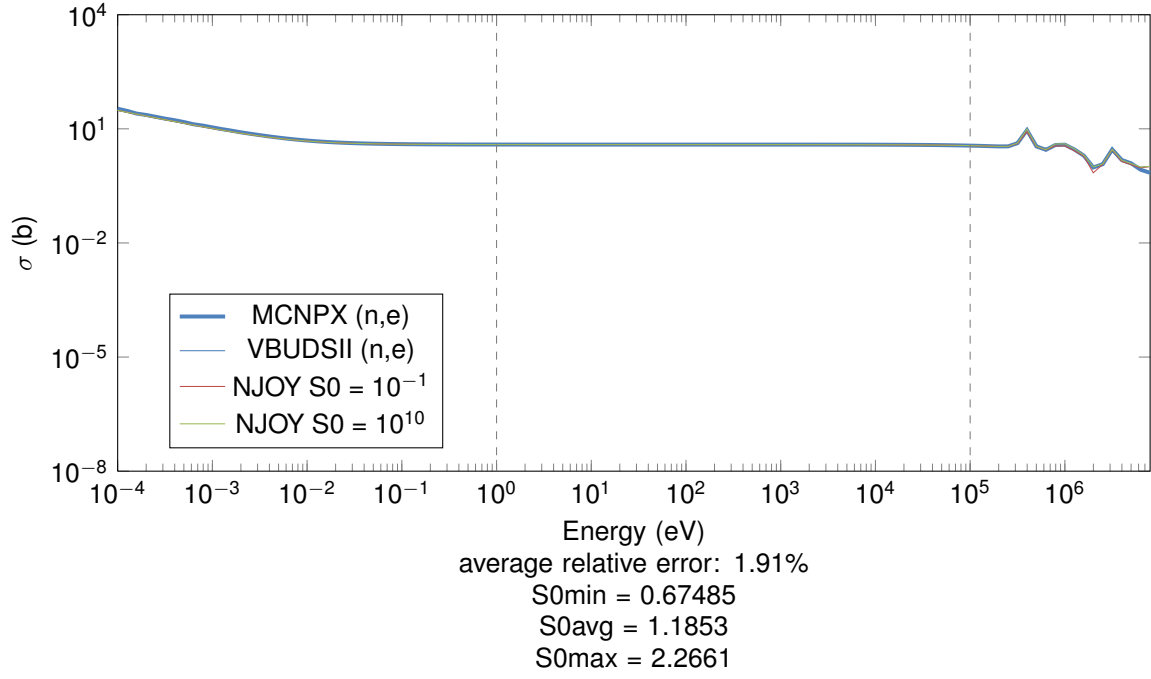


Figure 22: Energy-dependent cross sections in the UO2 cell for ZAIID 8016 and MT 2, generated by both MCNPX and VBUDSII.

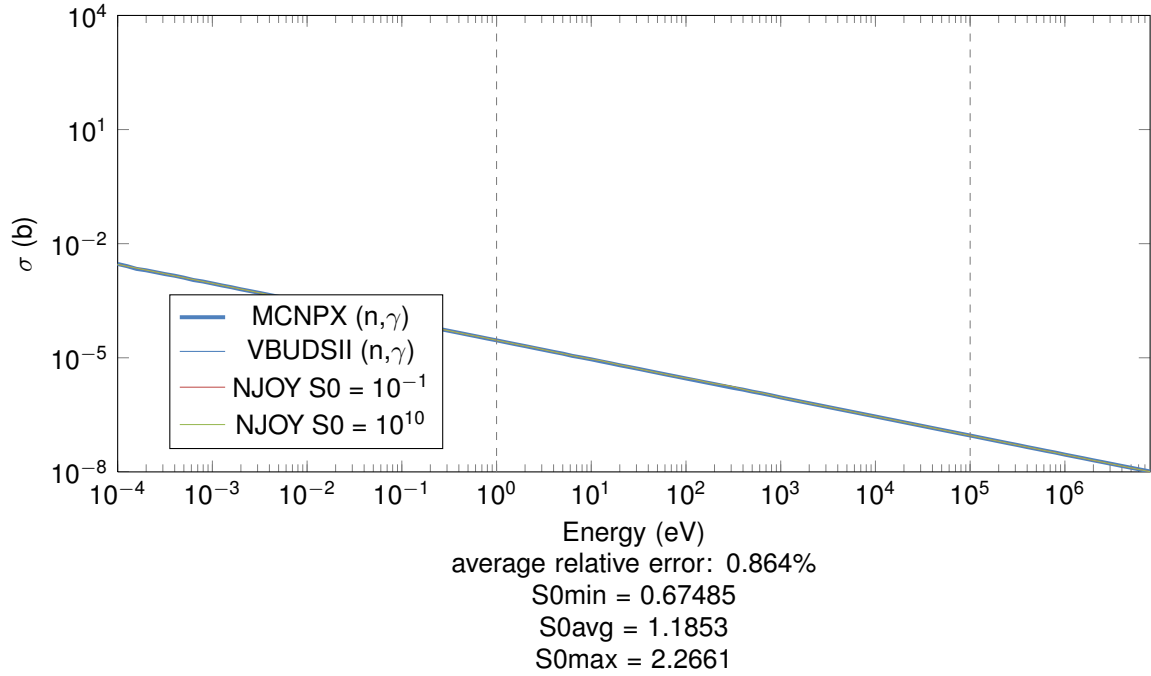


Figure 23: Energy-dependent cross sections in the UO2 cell for ZAIID 8016 and MT 102, generated by both MCNPX and VBUDSII.

MT 7: total

MT 4: inelastic scattering  
MT 2: elastic scattering  
MT 102: radiative capture  
MT 18: fission  
XS error 1: `nanmean(abs(V-M) ./M)`  
XS error 2: `V'*M/norm(V)/norm(M)`  
XS error 3: `log10(V)'*log10(M)/norm(log10(V))/norm(log10(M))`

cell	ZAID	MT	XS error 1	XS error 2	XS error 3	VBUDSII RR	MCNPX RR	RR error
1	222	7	0.34	NaN	NaN	3.87	1.94	1
1	222	2	0.34	NaN	NaN	3.87	1.93	1
1	222	102	$1.88 \cdot 10^{-2}$	NaN	NaN	$4.87 \cdot 10^{-3}$	$5.64 \cdot 10^{-3}$	0.14
2	92,235	7	$3.28 \cdot 10^{-2}$	NaN	NaN	10.88	11.18	$2.65 \cdot 10^{-2}$
2	92,235	2	$4.26 \cdot 10^{-2}$	NaN	NaN	1.78	1.18	0.51
2	92,235	102	$2.42 \cdot 10^{-2}$	NaN	NaN	1.74	1.7	$2.47 \cdot 10^{-2}$
2	92,235	18	$1.56 \cdot 10^{-2}$	NaN	NaN	7.36	8.2	0.1
2	92,238	7	$4.29 \cdot 10^{-2}$	NaN	NaN	2.05	1.38	0.49
2	92,238	2	$9.38 \cdot 10^{-2}$	NaN	NaN	1.86	1.12	0.66
2	92,238	102	$8.97 \cdot 10^{-2}$	NaN	NaN	0.18	0.11	0.56
2	92,238	18	0.46	NaN	NaN	$1.26 \cdot 10^{-2}$	$1.24 \cdot 10^{-2}$	$1.51 \cdot 10^{-2}$
2	8,016	7	$1.59 \cdot 10^{-2}$	NaN	NaN	0.65	0.45	0.46
2	8,016	2	$1.91 \cdot 10^{-2}$	NaN	NaN	0.65	0.45	0.46
2	8,016	102	$8.64 \cdot 10^{-3}$	NaN	NaN	$2.52 \cdot 10^{-6}$	$2.85 \cdot 10^{-6}$	0.12