

## 4.4. NEUTRON TECHNIQUES

Table 4.4.5.10.  $\langle j_4 \rangle$  form factors for 4d atoms and their ions

Atom or ion	<i>A</i>	<i>a</i>	<i>B</i>	<i>b</i>	<i>C</i>	<i>c</i>	<i>D</i>	<i>e</i>
Y	-8.0767	32.201	7.9197	25.156	1.4067	6.827	-0.0001	0.1031
Zr	-5.2697	32.868	4.1930	24.183	1.5202	6.048	-0.0002	0.0855
Zr <sup>+</sup>	-5.6384	33.607	4.6729	22.338	1.3258	5.924	-0.0003	0.0674
Nb	-3.1377	25.595	2.3411	16.569	1.2304	4.990	-0.0005	0.0615
Nb <sup>+</sup>	-3.3598	25.820	2.8297	16.427	1.1203	4.982	-0.0005	0.0724
Mo	-2.8860	20.572	1.8130	14.628	1.1899	4.264	-0.0008	0.0410
Mo <sup>+</sup>	-3.2618	25.486	2.3596	16.462	1.1164	4.491	-0.0007	0.0592
Tc	-2.7975	20.159	1.6520	16.261	1.1726	3.943	-0.0008	0.0657
Tc <sup>+</sup>	-2.0470	19.683	1.6306	11.592	0.8698	3.769	-0.0010	0.0723
Ru	-1.5042	17.949	0.6027	9.961	0.9700	3.393	-0.0010	0.0338
Ru <sup>+</sup>	1.6278	18.506	1.1828	10.189	0.8138	3.418	-0.0009	0.0673
Rh	-1.3492	17.577	0.4527	10.507	0.9285	3.155	-0.0009	0.0483
Rh <sup>+</sup>	-1.4673	17.957	0.7381	9.944	0.8485	3.126	-0.0012	0.0487
Pd	-1.1955	17.628	0.3183	11.309	0.8696	2.909	-0.0006	0.0555
Pd <sup>+</sup>	-1.4098	17.765	0.7927	9.999	0.7710	2.930	-0.0006	0.0530

Table 4.4.5.11.  $\langle j_4 \rangle$  form factors for rare-earth ions

Ion	<i>A</i>	<i>a</i>	<i>B</i>	<i>b</i>	<i>C</i>	<i>c</i>	<i>D</i>	<i>e</i>
Ce <sup>2+</sup>	-0.6468	10.533	0.4052	5.624	0.3412	1.535	0.0080	0.0522
Nd <sup>2+</sup>	-0.5416	12.204	0.3571	6.169	0.3154	1.485	0.0098	0.0519
Nd <sup>3+</sup>	-0.4053	14.014	0.0329	7.005	0.3759	1.707	0.0209	0.0372
Sm <sup>2+</sup>	-0.4150	14.057	0.1368	7.032	0.3272	1.582	0.0192	0.0319
Sm <sup>3+</sup>	-0.4288	10.052	0.1782	5.019	0.2833	1.236	0.0088	0.0328
Eu <sup>2+</sup>	-0.4145	10.193	0.2447	5.164	0.2661	1.205	0.0065	0.0516
Eu <sup>3+</sup>	-0.4095	10.211	0.1485	5.175	0.2720	1.237	0.0131	0.0494
Gd <sup>2+</sup>	-0.3824	10.344	0.1955	5.306	0.2622	1.203	0.0097	0.0363
Gd <sup>3+</sup>	-0.3621	10.353	0.1016	5.310	0.2649	1.219	0.0147	0.0494
Tb <sup>2+</sup>	-0.3443	10.469	0.1481	5.416	0.2575	1.182	0.0104	0.0280
Tb <sup>3+</sup>	-0.3228	10.476	0.0638	5.419	0.2566	1.196	0.0159	0.0439
Dy <sup>2+</sup>	-0.3206	12.071	0.0904	8.026	0.2616	1.230	0.0143	0.0767
Dy <sup>3+</sup>	-0.2829	9.525	0.0565	4.429	0.2437	1.066	0.0092	0.0181
Ho <sup>2+</sup>	-0.2976	9.719	0.1224	4.635	0.2279	1.005	0.0063	0.0452
Ho <sup>3+</sup>	-0.2717	9.731	0.0474	4.638	0.2292	1.047	0.0124	0.0310
Er <sup>2+</sup>	-0.2975	9.829	0.1189	4.741	0.2116	1.004	0.0117	0.0524
Er <sup>3+</sup>	-0.2568	9.834	0.0356	4.741	0.2172	1.028	0.0148	0.0434
Tm <sup>2+</sup>	-0.2677	9.888	0.0925	4.784	0.2056	0.990	0.0124	0.0396
Tm <sup>3+</sup>	-0.2292	9.895	0.0124	4.785	0.2108	1.007	0.0151	0.0334
Yb <sup>2+</sup>	-0.2393	9.947	0.0663	4.823	0.2009	0.965	0.0122	0.0311
Yb <sup>3+</sup>	-0.2121	8.197	0.0325	3.153	0.1975	0.884	0.0093	0.0435

Table 4.4.5.12.  $\langle j_4 \rangle$  form factors for actinide ions

Ion	<i>A</i>	<i>a</i>	<i>B</i>	<i>b</i>	<i>C</i>	<i>c</i>	<i>D</i>	<i>e</i>
U <sup>3+</sup>	-0.9859	16.601	0.6116	6.515	0.6020	2.597	-0.0010	0.0599
U <sup>4+</sup>	-1.0540	16.605	0.4339	6.512	0.6746	2.599	-0.0011	0.0471
U <sup>5+</sup>	-0.9588	16.485	0.1576	6.440	0.7785	2.640	-0.0010	0.0493
Np <sup>3+</sup>	0.9029	16.586	0.4006	6.470	0.6545	2.563	-0.0004	0.0470
Np <sup>4+</sup>	-0.9887	12.441	0.5918	5.294	0.5306	2.263	-0.0021	0.0583
Np <sup>5+</sup>	-0.8146	16.581	-0.0055	6.475	0.7956	2.562	-0.0004	0.0600
Np <sup>6+</sup>	0.6738	16.553	-0.2297	6.505	0.8513	2.553	-0.0003	0.0623
Pu <sup>3+</sup>	-0.7014	16.369	-0.1162	6.697	0.7778	2.450	0.0000	0.0546
Pu <sup>4+</sup>	-0.9160	12.203	0.4891	5.127	0.5290	2.149	-0.0022	0.0520
Pu <sup>5+</sup>	-0.7035	16.360	-0.0979	6.706	0.7726	2.447	0.0000	0.0610
Pu <sup>6+</sup>	-0.5560	16.322	-0.3046	6.768	0.8146	2.426	0.0001	0.0596
Am <sup>2+</sup>	-0.7433	16.416	0.3481	6.788	0.6014	2.346	0.0000	0.0566
Am <sup>3+</sup>	0.8092	12.854	0.4161	5.459	0.5476	2.172	-0.0011	0.0530
Am <sup>4+</sup>	-0.8548	12.226	0.3037	5.909	0.6173	2.188	-0.0016	0.0456
Am <sup>5+</sup>	-0.6538	15.462	-0.0948	5.997	0.7295	2.297	0.0000	0.0594
Am <sup>6+</sup>	-0.5390	15.449	-0.2689	6.017	0.7711	2.297	0.0002	0.0729
Am <sup>7+</sup>	-0.4688	12.019	-0.2692	7.042	0.7297	2.164	-0.0011	0.0262