

¹⁸⁷Re(d,p) **1972Sh13**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Juutinen, D. J. Hartley		NDS 150, 1 (2018)	1-Feb-2018

1972Sh13: E=12 MeV. Metallic, enriched (99%) in ¹⁸⁷Re target of 60 μg/cm² thickness. Magnetic spectrograph used to detect protons at 55° and 116°. For yield ratio of g.s. and the 18.6 min isomer in this reaction see [1967Na05](#).

¹⁸⁸Re Levels

E(level) [†]	J ^π [‡]	dσ/dΩ (μb/sr) [#]	E(level) [†]	J ^π [‡]	dσ/dΩ (μb/sr) [#]
0.0 & 20	1 ⁻	25	647? 8		7
61.5 & 20	2 ⁻	32	674 ^j 4	3 ⁻	20
154.3 & 30	3 ⁻	40	703? 8		9
169.8 @ ^b 40	3 ⁻ , 6 ⁻	≥117	717 3		21
181.8 @ ^c 40	4 ⁻	≤81	733 @ 4		30
205.1 ^d 30	2 ⁻	11	761 4		6
255.1 ^e 20	2 ⁻ , 4 ⁻	74	788 2		101
285.8 ^f 20	1 ⁻	51	813 6		30
306? ^d 8	3 ⁻	<3	844 5		14
321.2 @ ^g 30	4 ⁻	≈128	866 2		78
335.7 @ ^c 40	5 ⁻	≈45	895 6		28
357 ^f 5	2 ⁻	22	926 3		22
368 3		77	946 3		25
408? 8		<4	965 4		16
443 ^h 5	3 ⁺ , 5 ⁻	<6	981 6		14
465 ^f 3	4 ⁻ , 3 ⁻	≈12	996 3		28
489 ⁱ 5	3 ⁺	<5	1029 3		127
512? @ ⁱ 6	4 ⁺	≤19	1058 3		55
521 @ ^e 4	4 ⁻	≥28	1075 5		13
555 ^j 3	1 ⁻	85	1094 5		7
588 @ ^j	1 ⁻ , 4 ⁺	33	1118 5		41
606 ^j 4	2 ⁻	32	1160? 7		125

[†] From averaging the 55° and 116° data.

[‡] As proposed in [1972Sh13](#).

[#] Relative differential cross sections in μb/sr at 55°. Authors also give these values for 116°. Uncertainties are reported to be 20% for strong peaks and 30% to 50% for weak lines.

@ A complex line.

& Band(A): K^π=1⁻, π5/2[402]⊗ν3/2[512].

^a Band(B): K^π=3⁻, π5/2[402]⊗ν1/2[510].

^b Band(C): K^π=6⁻, π5/2[402]⊗ν7/2[503].

^c Band(D): K^π=4⁻, π5/2[402]⊗ν3/2[512].

^d Band(E): K^π=2⁻, π5/2[402]⊗ν9/2[505].

^e Band(F): K^π=2⁻, π5/2[402]⊗ν1/2[510].

^f Band(G): K^π=1⁻, π5/2[402]⊗ν7/2[503].

^g Band(H): K^π=4⁻, π5/2[402]⊗ν3/2[501].

^h Band(I): K^π=3⁺, π5/2[402]⊗ν11/2[615].

ⁱ Band(J): K^π=0⁺, π9/2[514]⊗ν9/2[505].

^j Band(K): K^π=1⁻, π5/2[402]⊗ν3/2[501].

$^{187}\text{Re}(\text{d,p})$ 1972Sh13

				Band(F): $K^\pi=2^-$, $\pi 5/2[402] \otimes v1/2[510]$
				<u>4⁻ 521</u>
				Band(E): $K^\pi=2^-$, $\pi 5/2[402] \otimes v9/2[505]$
				<u>4⁻, 3⁻ 465</u>
				Band(D): $K^\pi=4^-$, $\pi 5/2[402] \otimes v3/2[512]$
				<u>5⁻ 335.7</u>
				<u>3⁻ 306</u>
				Band(B): $K^\pi=3^-$, $\pi 5/2[402] \otimes v1/2[510]$
				<u>2⁻, 4⁻ 255.1</u>
				<u>2⁻, 4⁻ 255.1</u>
				<u>2⁻, 4⁻ 255.1</u>
				Band(C): $K^\pi=6^-$, $\pi 5/2[402] \otimes v7/2[503]$
				<u>2⁻ 205.1</u>
				<u>4⁻ 181.8</u>
				<u>3⁻, 6⁻ 169.8</u>
				<u>3⁻, 6⁻ 169.8</u>
				<u>3⁻ 154.3</u>
				<u>2⁻ 61.5</u>
				<u>1⁻ 0.0</u>

$^{187}\text{Re}(\text{d,p})$ 1972Sh13 (continued)

					Band(K): $K^\pi=1^-$, $\pi 5/2[402] \otimes \nu 3/2[501]$
					<u>3⁻ 674</u>
					Band(I): $K^\pi=3^+$, $\pi 5/2[402] \otimes \nu 11/2[615]$
					<u>2⁻ 606</u>
				<u>1⁻, 4⁺ 588</u>	<u>1⁻, 4⁺ 588</u>
					<u>1⁻ 555</u>
					Band(J): $K^\pi=0^+$, $\pi 9/2[514] \otimes \nu 9/2[505]$
					<u>4⁺ 512</u>
					<u>3⁺ 489</u>
					Band(G): $K^\pi=1^-$, $\pi 5/2[402] \otimes \nu 7/2[503]$
					<u>4⁻, 3⁻ 465</u>
					<u>3⁺, 5⁻ 443</u>
					<u>2⁻ 357</u>
					Band(H): $K^\pi=4^-$, $\pi 5/2[402] \otimes \nu 3/2[501]$
					<u>4⁻ 321.2</u>
					<u>1⁻ 285.8</u>