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List of Nuclear Constants Recently Determined at the Radiation Laboratory, University of California

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Radiation Laboratory

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LIST OF NUCLEAR CONSTANTS RECENTLY DETERMINED
AT THE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA

E. K. Hyde

August 17, 1949

Berkeley, California

List of Nuclear Constants Recently Determined
at the Radiation Laboratory, University of California

E. K. Hyde

Isotope	Certainty of Mass Assignment	Half-Life	Mode of Decay Branching Ratios Energies	Genetic Relationships and Method of Production	Ref.
Tl ¹⁹⁸	Certain	1.8 hr	K e ⁻ 0.4 Mev γ 1.3	K granddaughter of 9 min Bi (Ref N1) Produced by Au(α3n)	O1
Tl ¹⁹⁹	Certain	7 hr	K e ⁻ 0.5 γ 1.5	Daughter of 80 min Pb, granddaughter of 25 min Bi (Ref N1) Produced by Au(α2n)	O1
Tl ²⁰⁰	Certain	27 hr	K e ⁻ 0.4 γ 1.3 0.3(N1)	Daughter of 18 hour Pb granddaughter of 35 min Bi (N1) Produced by Au(α,n)	O1
Tl ²⁰¹	Probable	72 hr	K e ⁻ 0.13 no γ >1 Mev	Daughter of 8 hour Pb granddaughter of 60 min Bi	N1
Pb ¹⁹⁹	Certain	~80 min	K	Parent of 7 hr Tl ¹⁹⁹ daughter of 25 min Bi ¹⁹⁹	N1
Pb ²⁰¹	Probable	8 hr	K	Parent of 72 hr Tl daughter of 60 min Bi daughter of 110 min Bi	N1
Pb ²⁰⁰	Certain	18 hr	K	Parent of 27 hr Tl daughter of 35 min Bi ²⁰⁰	N1
Pb ²⁰³			K	Daughter of 13 hour Bi	N1
Pb ²⁰⁴	Certain			Daughter of 12 hr Bi granddaughter of 4 hr Po Produced by Pb(dn) Tl(d3n)	N1
Bi ¹⁹⁸	Certain		α 5.83 Mev K/α ≈ 7x10 ³	Grandparent of 1.8 hr Tl Produced by Pb + d Pb + p	N1
Bi ¹⁹⁹	Certain	25 min	α 5.47 Mev K/α ≈ 6x10 ⁴	Parent of 80 min Pb ¹⁹⁹ grandparent of 7 hr Tl ¹⁹⁹ Produced by Pb + d Pb + p	N1

Isotope	Certainty of Mass Assignment	Half-Life	Mode of Decay Branching Ratios Energies	Genetic Relationships and Method of Production	Ref.
Bi ²⁰⁰	Certain	35 min	K	Parent of 18 hr Pb Grandparent of 27 hr Tl Produced by Pb + d Pb + p	N1
Bi ²⁰¹ formerly listed as Bi ²⁰⁰	Probable	60 min	α 5.15 Mev K/ $\alpha \approx 1 \times 10^6$	Parent of 8 hr Pb grandparent of 72 hr Tl Produced by Pb + d Pb + p	N1
Bi ²⁰¹	Probable	110 min	K	Parent of 8 hr Pb grandparent of 72 hr Tl Produced by Pb + d Pb + p	N1
Bi ²⁰²	Probable	2 hr	K	Daughter of 40 min Po	K1
Bi ²⁰³	Certain	13 hr (N1)	K (N1)	Parent of 52 hr Pb ²⁰³ (N1) daughter of 37 min Po(K1) Produced by Pb + d Pb + p	
Bi ²⁰⁴				Daughter of 4 hr Po(K1)	
Bi ²⁰⁵	Probable	~ 14 d	K γ 1.7 Mev	Daughter of 1.5 hr Po	K1
Bi ²⁰⁸		< 30 sec or very long			N1
Bi ^{210m}	Probable	long	α 5.02 Mev	Parent of 4 min Tl Produced by Bi ²⁰⁹ (n γ)	N1
Po ²⁰⁵	Probable	1.5 hr	K α 5.2 Mev	Parent of 14 d Bi Produced by Bi(p5n) Pb ²⁰⁴ (α 3n)	K1
Po ²⁰³	Probable	37 min	α K	Parent of 13 hr Bi grandparent of 52 hr Pb Produced by Bi(p7n)	K1
Po ²⁰⁴ formerly listed as Po ²⁰⁵	Certain	4 hr	α 5.35 Mev K K/ $\alpha \sim 10^3$	Parent of 12 hr Bi ²⁰⁴ grandparent of 68 min Pb ²⁰⁴ Parent of 18 hr Pb ²⁰⁰ Produced by Bi + p	K1
Pb ²⁰² formerly listed as Po ²⁰³	Probable	40 min	K α 5.56 K/ $\alpha \sim 10^3$	Parent of 2 hr Bi Produced by Bi + p	K1

Isotope	Certainty of Mass Assignment	Half-Life	Mode of Decay Branching Ratios Energies	Genetic Relationships and Method of Production	Ref.
At ²⁰⁵	Uncertain	10 min	α 6.10 Mev K(?)	Produced by Bi + α	B1
At ²⁰⁶	Uncertain	25 min	α 5.90 Mev K (?)	Produced by Bi + α	B1
At ²⁰⁹ formerly listed as At ²⁰⁸	Probable	5.7 hr	α 5.65 Mev K (?)	Produced by Bi + α	B2
At ²⁰⁸	Probable	7.0 hr	α not obs. K	Produced by Bi + α Parent of Po ²⁰⁸	B2
At ^{208m}	Probable	1.7 hr	α 0.5% 5.65 Mev K 99.5%	Daughter of 19 min Fr ²¹² parent of Po ²⁰⁸	H1
At ²⁰⁷	Uncertain	1.8 hr	K (?) α 5.76 Mev		B2
Em ²¹⁰	Uncertain	2.3 hr	α Energy undeter- mined	Produced by Th + p	M2
Em ²¹²	Probable	23 min (M2)	α 6.25 Mev	Daughter 19 min Fr ²¹² parent of Po ²⁰⁸	H1
Fr ²¹²	Probable	19 min	α 50% 6.25 Mev K 50%	Parent 1.7 hr At (α 5.65 Mev) 23 min Em Produced by Th + p	H1
Fr ²²²	Certain	14 min	β^-	Produced by Th + p Parent 38 sec Em ²²²	H1

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- N1 Neumann, H. M., and I. Perlman, unpublished work.
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