

# graviton

$$J = 2$$

OMITTED FROM SUMMARY TABLE

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### graviton MASS

All of the following limits are obtained assuming Yukawa potential in weak field limit. VANDAM 70 argue that a massive field cannot approach general relativity in the zero-mass limit; however, see GOLDHABER 74 and references therein.  $h_0$  is the Hubble constant in units of  $100 \text{ km s}^{-1} \text{ Mpc}^{-1}$ .

VALUE (eV)	DOCUMENT ID	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●		
$< 2 \times 10^{-29} h_0^{-1}$ $< 7 \times 10^{-28}$ $< 8 \times 10^4$	<sup>1</sup> DAMOUR 91	Binary pulsar PSR 1913+16
	GOLDHABER 74	Rich clusters
	HARE 73	Galaxy
	HARE 73	$2\gamma$ decay

<sup>1</sup> DAMOUR 91 is an analysis of the orbital period change in binary pulsar PSR 1913+16, and confirms the general relativity prediction to 0.8%. "The theoretical importance of the [rate of orbital period decay] measurement has long been recognized as a direct confirmation that the gravitational interaction propagates with velocity  $c$  (which is the immediate cause of the appearance of a damping force in the binary pulsar system) and thereby as a test of the existence of gravitational radiation and of its quadrupolar nature." TAYLOR 93 adds that orbital parameter studies now agree with general relativity to 0.5%, and set limits on the level of scalar contribution in the context of a family of tensor [spin 2]-biscalar theories.

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### graviton REFERENCES

TAYLOR	93	Nature 355 132	J.N. Taylor <i>et al.</i>	(PRIN, ARCBO, BURE+) J
DAMOUR	91	APJ 366 501	T. Damour, J.H. Taylor	(BURE, MEUD, PRIN)
GOLDHABER	74	PR D9 1119	A.S. Goldhaber, M.M. Nieto	(LANL, STON)
HARE	73	CJP 51 431	Hare	(SASK)
VANDAM	70	NP B22 397	H. van Dam, M. Veltman	(UTRE)

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