graviton

$J = 2$

OMITTED FROM SUMMARY TABLE

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 km s^{-1} Mpc^{-1}.

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

[1] DAMOUR 91 is an analysis of the orbital period change in binary pulsar PSR1913+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.

graviton REFERENCES

TAYLOR	93	Nature 355 132	+Wolszczan, Damour+	(PRIN, ARCBO, BURE, CARLC) J
DAMOUR	91	APJ 366 501	+Taylor	(BURE, MEUD, PRIN)
GOLDHABER	74	PR D9 119	+Nieto	(LANL, STON)
HARE	73	CJP 51 431		(SASK)
VANDAM	70	NP B22 397	van Dam, Veltman	(UTRE)