NODE=G033

graviton

$J = 2$

OMITTED FROM SUMMARY TABLE

graviton MASS

NODE=G033205

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 09 and references therein. h_0 is the Hubble constant in units of 100 km s^{-1} Mpc^{-1}.

NODE=G033205

NODE=G033M

VALUE (eV)	*DOCUMENT ID*		*COMMENT*	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<7 \times 10^{-32}$	[1] CHOUDHURY	04	Weak gravitational lensing	
$<7.6 \times 10^{-20}$	[2] FINN	02	Binary Pulsars	
	[3] 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	OCCUR=2

[1] CHOUDHURY 04 sets limits based on nonobservation of a distortion in the measured values of the variance of the power spectrum. NODE=G033M;LINKAGE=CH

[2] FINN 02 analyze the orbital decay rates of PSR B1913+16 and PSR B1534+12 with a possible graviton mass as a parameter. The combined frequentist mass limit is at 90%CL. NODE=G033M;LINKAGE=FN

[3] 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. NODE=G033M;LINKAGE=A

graviton REFERENCES

NODE=G033

GOLDHABER	09	arXiv:0809.1003	A.F. Goldhaber, M.M. Nieto	(STON, LANL)	REFID=52694
CHOUDHURY	04	ASP 21 559	S.R. Choudhury *et al.*	(DELPH, MELB)	REFID=50208
FINN	02	PR D65 044022	L.S. Finn, P.J. Sutton		REFID=48874
TAYLOR	93	NAT 355 132	J.N. Taylor *et al.*	(PRIN, ARCBO, BURE+) J	REFID=43820
DAMOUR	91	APJ 366 501	T. Damour, J.H. Taylor	(BURE, MEUD, PRIN)	REFID=43819
GOLDHABER	74	PR D9 1119	A.S. Goldhaber, M.M. Nieto	(LANL, STON)	REFID=43497
HARE	73	CJP 51 431	M.G. Hare	(SASK)	REFID=43498
VANDAM	70	NP B22 397	H. van Dam, M. Veltman	(UTRE)	REFID=43499