# 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 | $2\gamma$ decay |

[1] 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.

## graviton REFERENCES


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|---|---|---|---|---|
| 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 1119 | +Nieto | (LANL, STON) |
| HARE | 73 | CJP 51 431 | | (SASK) |
| VANDAM | 70 | NP B22 397 | van Dam, Veltman | (UTRE) |