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Expected Upper and Lower Limits on Pulsars Astrophysical Parameters from LIGO II data* G. SANTOSTASI, Mcneese State University — The current LIGO observatories are collecting data on the strength of possible gravitational waves from different sources in terms of the dimensional strain parameter h. Among the possible sources there are rotating neutron stars. The strain h that can be converted in terms of fundamental parameters that are characteristics of the neutron stars physical properties. In particular the ellipticity of the neutron star can be derived from the strain when certain other parameters are know as the rotation frequency, spin-down and distance as in the case of known pulsars. At the moment the LIGO observatories are setting upper limits on ellipticity on few of the known pulsars. All these upper limits (with the exclusion of the limit on the Crab Pulsar) can be derived with more stringent way with other methods as for example the Energy Conservation method where the observed spin-down of the pulsar is attributed solely to the emission of gravitational waves and the strength of the wave is derived from calculating the resulting loss of energy due to this emission process. The situation is quite different when LIGO II data will be available in the future. In this case, the upper limit from direct observation will be better for a large number of know pulsars. Furthermore, once the Energy Conservation limit is beaten then other interesting lower and upper limits on astrophysical parameters can be derived from the data. The methods and results of the extraction of these parameters are discussed in this work. *Shearman Grant 2005.

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