above 1 TeV, it is unlikely that the Crab Nebula will be detectable even with the new detectors planned for ultra high energy gamma-ray astronomy. At lower energies (100 MeV) a non-pulsed component has been detected, but its steep spectrum (Clear et al. 1987) is not compatible with a Compton-synchrotron nebular origin; this could be an unpulsed component of the pulsar. The extrapolated flux (Figure 2) falls a factor of ten below the flux reported here.

The existence of a steady source of TeV gamma rays has important consequences for the development of the field of ground-based gamma-ray astronomy. For years, significant improvements have been hampered by the absence of a standard candle which would act as a means to calibrate and test new techniques. Although weak, the Crab Nebula appears to have the stability necessary for this role. It will be of interest therefore to compare the results from other experiments when they devote time to the study of the steady TeV emission from this source.

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Simplified Models for the Evolution of Supernova Remnants Modified by Particle Acceleration

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Summary

A system of coupled ordinary differential equations is presented which models the dynamical evolution of a supernova remnant as modified by the acceleration of the Galactic cosmic rays. In contrast to earlier two-fluid models, the closure parameters are not taken as prescribed constants but are estimated dynamically within the model. Diffusive coupling between the outer shock and the remnant interior is included; this is shown to be an important moderator of reaction effects as is heating by Alfvén-wave dissipation. For reasonable parameters solutions are found which appear consistent both with observations of young remnants and with the idea that the bulk of the Galactic cosmic rays are produced in supernova remnants. Details will be published elsewhere.

Has Gl890 a Planetary Companion?

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Summary

Gliese 890 is the most rapidly rotating, solar neighbourhood flare/spotted star known with a period of 10.35 hrs. We have observed it spectroscopically with the IUE satellite during a substantial portion of one rotation. This data has been supplemented by further IUE spectra taken from the IUE archives which cover two different stellar rotations. The strengths of various chromospheric and transition-region emission lines, including the Mg II h and k resonance lines, were measured as a function of rotational phase. A pronounced dip in flux was seen to repeat at constant phase. This has been interpreted as an eclipse by an unseen companion. Dynamical arguments lead to the conclusion that such a companion would have a mass below the minimum hydrogen-burning mass and may be a planetary body. A paper based on this work has been submitted to Astron. Astrophys.