

## ***Interactive comment on “The velocity of meteoroids” by I. P. Williams***

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Received and published: 2 February 2004

The third method that is used is Fresnel diffraction.

The referee asks for expert comment on the current state. This is what the remaining papers from the meeting should provide. However, some comments on the difficulties with some of the suggestions from the referee would not be amiss. First is the obvious comment that, in order to observe the same meteor, observers have to be located within about 100km of each other. The radar facilities tend to be large permanent fixtures and so the only feasible experiment is to place an optical facility close to a radar one. This has been tried (for example by Pecina et al, 2001, *Meteors 2001*, ESA SP-495 p425), but in reality the radar detects far more meteors than the optical system and there is a danger of a circular argument in that the radio meteor that has the optical counterpart is selected on the basis that its orbital characteristics are most similar to the optical one. When we consider the large aperture radars, the problem gets worse, the beam width is less than 1 degree wide, compared to the 3 degrees or so of the classical

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meteor radars, something like 20 degrees for TV observations and probably 90 degrees for a truly visible observation. The narrow beam methods only work because they are able to observe much fainter meteors and thus a much enhanced number per unit area of sky. Thus for example Pellinen-Wamberg, 2001, *Meteors 2001*, ESA SP-495 p 443, observing at the height of the Leonid meteor storms in 1998 and 1999 from EISCAT, found 10 meteors but NONE were Leonids.

The other point perhaps worth mentioning is that the hyperbolic meteors (if they exist) are in the sporadic background (almost by definition since stream meteors are on bound orbits). The Large aperture radars essentially see only this background whenever they look, the visible systems tend to look only at shower times and mostly detect and measure only stream meteors.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 4, 109, 2004.

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