# Detection of Planetesimals by Occultation of Maser Sources

*by*

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It seems that planetesimals are left outside of orbit of the Pluto. It is very important to confirm the existence of these planetesimals for the theory of the Solar System evolution. However light and radio radiation from planetesimals seem to be too weak to detect them directly. Therefor the authors examined possibility to detect planetesimals by occultation of water vapor maser sources.

Apparent angular diameter of spots of the water vapor maser sources are small enough in comparison with estimated one of planetesimals. This means large intensity variation of maser spots will occur during the occultation by planetesimal. Frequency of each spot is different by Doppler shift. Therefor monitoring of spot intensity using a single dish radio telescope with the spectrometer is enough to detect this phenomena. The occultation will be occur on one spot, so it is easy to distinguish from the noise caused by passage of a airplane or instantaneous power failure. However, in the case that the occultation occurs on only one spot, it is very difficult to separate the speed and the size of a celestial body which covers the maser spot. If this celestial body will cover other spots in succession, it is possible to separate these parameters using spot positions determined by, for example, VLBI.

Estimated duration and probability of the occultation are 1 second and 1 event/year.

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