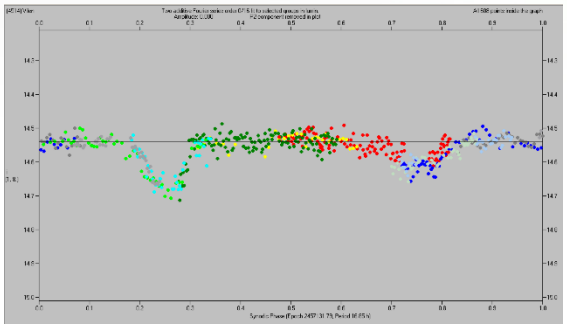
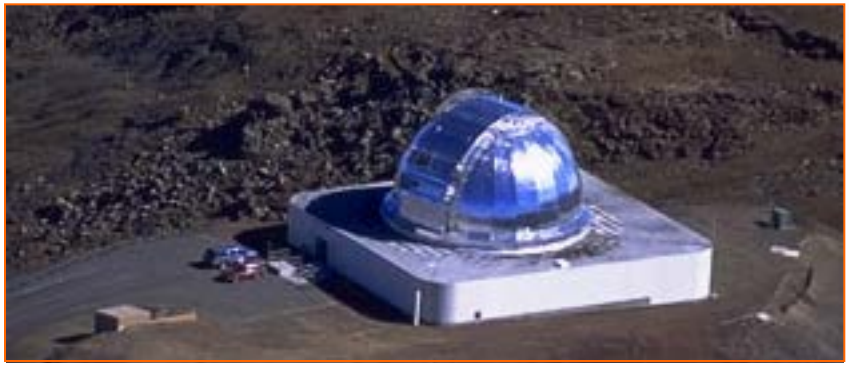
Two New Binary Asteroid Systems

Asteroid	Diameter	Moonlet	Rotation period	Orbital period
4514 Vilen	~6.09 km	>1.58 km	2.89 hr	~16.85 hr
4541 Mizuno	~6.29 km	~1.5 km	5.26 hr	~29.68 hr

The two newly discovered binary asteroid systems (4514) Vilen and (4541) Mizuno [in the Main Belt, orbiting the Sun between Mars and Jupiter] were likely formed by the splitting of the primary asteroid due to solar radiation pressure. The artist rendition to the left shows the secondary in orbit around the primary after fission.



Dips in photometric lightcurve observations of (4514) Vilen obtained by Pray *et al*. (IAU Circulars) indicated that two bodies were passing in front of each other, revealing it to be a binary system. The moonlet travels around its primary every ~16.8 hours. (4541) Mizuno was similarly found to be binary.



Spectroscopic observations by astronomers operating NASA's Infrared Telescope Facility (IRTF) on Maunakea, Hawaii, indicate that (4514) Vilen is a M/X-type of asteroid. Some carbonaceous chondrite meteorites have spectra similar to Vilen. (4541) Mizuno was characterized as an S-type asteroid with surface composition similar to ordinary chondrite meteorites. **(Reddy, *et al*. – in preparation).**

CK carbonaceous chondrite

Ordinary chondrite