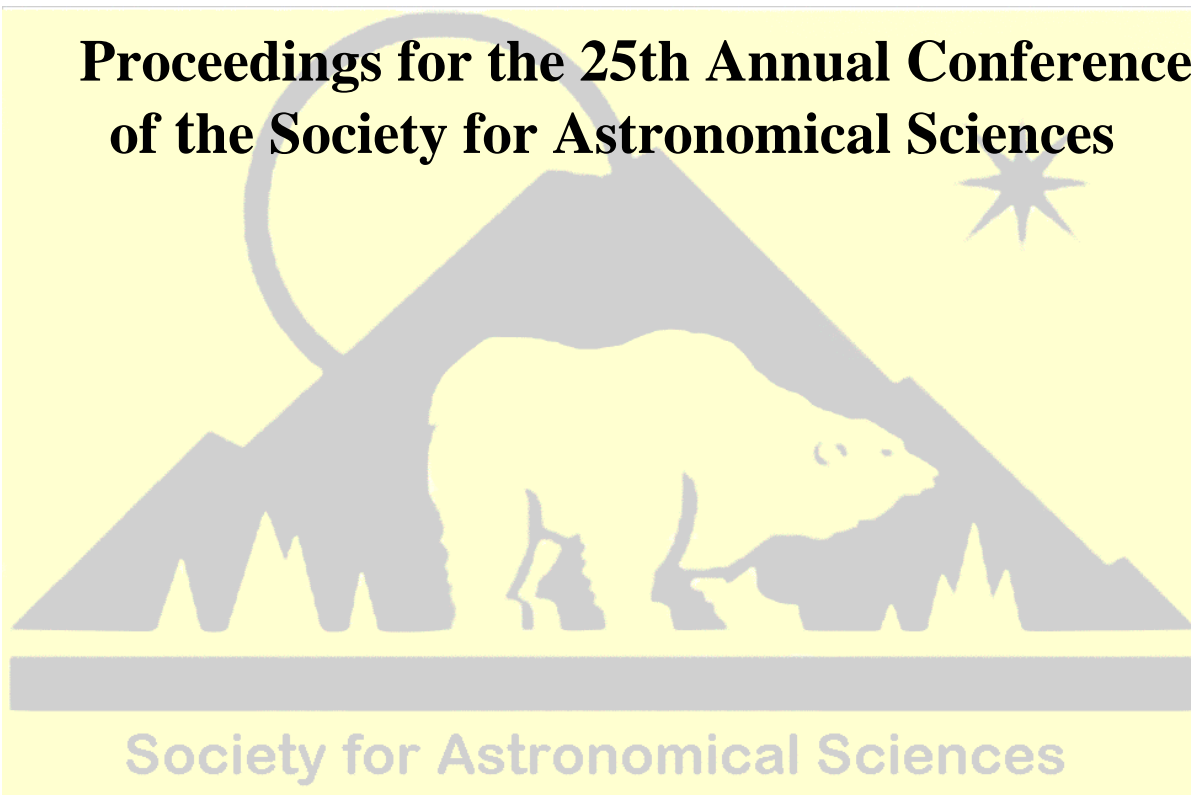

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Radar Images and Shape Models of Asteroids 10115 (1992 SK), 23187 (2000 PN9), and 29075 (1950 DA)

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Abstract

This talk will describe delay-Doppler radar imaging, spin vector estimation, and shape reconstruction of Near-Earth asteroids 1992 SK, 2000 PN9, and 1950 DA. For each object the radar data yield two pole directions and shape models that give comparable fits to the data. Inclusion of lightcurves greatly reduced the uncertainty in the spin states and was essential to break a degeneracy in the pole direction of 1992 SK. 1992 SK was observed at Goldstone in March of 1999. Inversion of the images and lightcurves reveals an elongated object with dimensions of 1.3 x 0.9 x 0.9km and prominent surface topography. 2000 PN9 and 1950 DA were observed at Arecibo and Goldstone in March of 2001. The two 2000 PN9 models are roughly spherical and approximately 2km in diameter. For 1950 DA, the pole direction degeneracy persists after inclusion of lightcurves and the two pole directions yield very different shape models. One model has distinctly angular surface features, low elongation, and a diameter of about 1.15km. The other model is oblate and roughly 1.4km in equatorial diameter. 2000 PN9 and 1992 SK will approach within 0.020 and 0.110 AU in March 2006, when they will be strong radar imaging targets. New observations are scheduled and will be used to improve the pole directions and shape models. Preliminary results will be reported at the meeting. © 2006 Society for Astronomical Sciences.
