

Binaries by the Bushel – Binary asteroids observed at the Center for Solar System Studies

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The Center for Solar Systems Studies (CS3) is located in the California high desert in Landers, north of Joshua Tree National Park. Currently, ten telescopes are exclusively used to observe asteroids and two more are under construction. The facility is fully robotic with local computers running the telescope/camera software as well opening and closing the roofs via Internet-accessible power strips. The computers are accessed via the Internet using remote desktop software so that we can monitor operations and change scripts to work new targets when needed. Otherwise, the scripts can run for several days without intervention. We started our campaign in 2013 concentrating observing NEAs and members of the Hungaria and Jovian Trojan families. When conditions allowed, we try to obtain dense lightcurves spread over weeks for lightcurve inversion modeling. We are working closely with the radar teams at Arecibo and Goldstone in order to supplement their radar observations with dense lightcurves. As a natural consequence of obtaining dense lightcurves of NEAs and Hungaria family asteroids, many binary asteroids have been discovered. As of April 2016, the asteroid lightcurve database (LCDB; Warner et al., 2009) contains 263 asteroids that are known or suspected binary or multiple systems. Since 2013, CS3 has observed 56 of these known or suspected binary systems or about 21% of the total.