New On-Line Tools for the Human Exploration and Threat Mitigation of Near-Earth Asteroids

JPL’s NEO Program Office website (neo.jpl.nasa.gov) has added an on-line tool for information on viable human NEA missions and another educational tool whereby users can design spacecraft-NEA impact missions to deflect hypothetical Earth impactors.

A Space-Based, Near-Sun Survey To Discover Atira And Aten Orbital Class Near-Earth Objects

The NEOSSat spacecraft will efficiently discover Atira and Aten orbital class near-Earth asteroids by searching arcs of sky across the ecliptic plane to within 45 degrees of the Sun. Approximately 10 Atiras are expected to be discovered per year.

Keyholes and Jabbas: The Role of Pre-Impact Close Approaches in Asteroid Deflection

In devising strategies for deflection of a threatening NEO on an impact trajectory, the object’s pre-impact close approaches play a major role. They produce keyholes which amplify prior deflections, and “jabbas” which have the opposite effect.

Identification of Known Objects in Solar System Surveys

We discuss a method for the assignment of new observations to a known object in the strongly asymmetric case in which the existing least squares orbit is very well constrained and the new data are sparse. The method is tested by using PS1 data.

Remote Observatory ISON-NM, Survey of Minor Solar System Bodies

The first remote Russian observatory in the western hemisphere, ISON-NM began, it’s work in May of 2010. Now we can represent description of our work, first results of survey of minor Solar System bodies and prospects for the future.

NEOSHield: An European Project to Address Impact Hazard Mitigation Issues

The European Union NEOSHield project is described. The primary aim of the project is to investigate in detail the three most promising mitigation techniques: the kinetic impactor, blast deflection, and the gravity tractor, and devise feasible demonstration missions.
Threatened Impact of 2011 AG5: A Potential Deflection Campaign Should be Analyzed Now

Though the 1:600 chance of Earth impact by 2011 AG5 in 2040 is decades away, existing capabilities may be insufficient to deflect it from its keyhole by 2023 or from Earth by 2040 if we wait until after its next apparition. Planning must begin now.

Spaceguard Activity in Japan: Past and Future in Bisei Spaceguard Center

We review the spaceguard activity in Japan, especially our observational activities at Bisei Spaceguard Center. Our observational results in these 12 years are summarized here, and our outreach activities will be also briefly mentioned.

The Pan-STARRS1 Search for Near Earth Asteroids

The Pan-STARRS1 telescope (PS1) is conducting a survey of the sky serving a diverse range of science that includes a search for NEOs. The present status of the NEO search will be described, and future plans will be explained.

Compositional Distribution of the Near-Earth Object Population

We will highlight our findings to identify source regions for NEOs and PHAs and the size dependence of their compositional distribution as it pertains to the role of the Yarkovsky effect in delivering bodies from the main-belt to near-Earth space.

Arecibo and Goldstone Radar Observations of Binary Near-Earth Asteroid and Marco Polo-R Mission Target (175706) 1996 FG3

We report Arecibo (2380 MHz), 13-cm) and Goldstone (8560 MHz, 3.5-cm) delay-Doppler radar observations of binary near-Earth asteroid and Marco Polo-R mission target (175706) 1996 FG3 that were obtained on nine dates November-December, 2011.

Shape and Spin of Near-Earth Asteroid 308635 (2005 YU55) from Radar Images and Speckle Tracking

On 2011 November 8, 2005 YU55 made a 0.845 lunar distance flyby. We organized a radar campaign using Arecibo, Goldstone, the GBT, and the VLBA. YU55 is 360 ± 40 m in diameter, has a surface strewn with 10-m scale boulders, and spins retrograde.

The Shape and Spin Distributions of Near-Earth Asteroids Observed with the Arecibo Radar System

We will present the shape and spin distributions of near-Earth asteroids observed by the Arecibo planetary radar system over the last 15 years.