Current status of amateur observations of minor bodies in the CIS countries

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Golden age

The second-half of the 20th century became golden age for astronomy in the USSR. The new, state-of-the-art observatories was built, soviet scientists had the leading positions in many directions of astronomical science, including search and study of new asteroids and comets. Nauchniy and Simeiz observatories are widely known entire the World.

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Golden age

In spite of the Crimea-Nauchnij observatory was stopped all observation of minor bodies of Solar system in 1992. But, Nauchnij observatory, in the present time, still have 15 place in the list of the most prolific discovery sites in the World. On this site discovered more than 11% of all new asteroids from 1966 to 1992.

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Golden age

Most prolific discovery sites (on Sep. 4 2009, MPC)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Discoveries</th>
<th>Between</th>
<th>Site name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>107582</td>
<td>1980-2009</td>
<td>Lincoln Laboratory ETS, New Mexico</td>
</tr>
<tr>
<td>2</td>
<td>22680</td>
<td>1981-2009</td>
<td>Steward Observatory, Kitt Peak-Spacewatch</td>
</tr>
<tr>
<td>3</td>
<td>15340</td>
<td>1999-2007</td>
<td>Palomar Mountain/NEAT</td>
</tr>
<tr>
<td>4</td>
<td>13475</td>
<td>1998-2008</td>
<td>Lowell Observatory-LONEOS</td>
</tr>
<tr>
<td>5</td>
<td>6540</td>
<td>1949-2007</td>
<td>Palomar Mountain</td>
</tr>
<tr>
<td>6</td>
<td>6415</td>
<td>1998-2009</td>
<td>Catalina Sky Survey</td>
</tr>
<tr>
<td>7</td>
<td>5500</td>
<td>1995-2006</td>
<td>Haleakala-AMOS</td>
</tr>
<tr>
<td>8</td>
<td>5463</td>
<td>1976-2005</td>
<td>European Southern Observatory, La Silla</td>
</tr>
<tr>
<td>9</td>
<td>2968</td>
<td>2004-2009</td>
<td>Mt. Lemmon Survey</td>
</tr>
<tr>
<td>10</td>
<td>2442</td>
<td>1991-2002</td>
<td>Oizumi</td>
</tr>
<tr>
<td>11</td>
<td>1745</td>
<td>1975-2007</td>
<td>Siding Spring Observatory</td>
</tr>
<tr>
<td>12</td>
<td>1392</td>
<td>2001-2009</td>
<td>LPL/Spacewatch II</td>
</tr>
<tr>
<td>13</td>
<td>1376</td>
<td>1995-2001</td>
<td>Visnjan</td>
</tr>
<tr>
<td>14</td>
<td>1285</td>
<td>1966-1992</td>
<td>Crimea-Nauchnij</td>
</tr>
<tr>
<td>15</td>
<td>1215</td>
<td>1982-2002</td>
<td>Peking Observatory, Xinglong Station</td>
</tr>
</tbody>
</table>

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Twilight

With the disintegration of the USSR the work on search and study of new asteroids and comets was practically stopped because of cessation of financing and producing of photographic plates.
Twilight

With other side, at this time we seen revolution in astronomical equipment. The photographic plates was replaced by new, more sensitive CCD cameras. From this time, *amateur astronomers* could be involved for the comet and asteroids search with the respectively *small telescopes*.

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Amateurs rising

The first large amateur observatory (MPC code A50), which observes minor planets, is located 150 km southwest from Kyiv in a small town of Andrushivka, Ukraine.

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Amateurs rising

It is currently equipped with 2 automated 600-cm reflectors and now is the CIS leader according to the number of observations.

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Amateurs rising

In aggregate, more than 100 new asteroids have been discovered here and some 73 000 measurements made. A50 enters top 20 observatories and is ranked 9 among the non-professional surveys by the number of observations in 2008. This site has discovered 2 NEO – 2007 QA2 and 2008 KB12.

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Amateurs rising

Number of observations for Andrushivka Astronomical Observatory
(MPC: A50)

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The Astrotel-Caucasus Observatory (MPC code 114) is the next state-of-the-art amateur observatory located in North Caucasus near the Special Astrophysical Observatory.
Amateurs rising

It is equipped with the fully automated 300-mm Corrected Ritchey-Chretien telescope with CCD, while a 400-cm reflector is to be put into operation soon.

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Amateurs rising

Since the beginning of the operation, this observatory discovered more than 80 asteroids, among them are another 2 near-earth asteroids - 2009 HZ67 and 2009 OS5. Also on this site discovered one Centaur – 2009 QV38 and one Jupiter Trojans - 2009 SC14.
It should be emphasized here that one of the discoveries - 2008 VS3 – was caught by the 106-mm refractor. This is a good demonstration of the fact that any amateur telescope can discover asteroids. Also other, Astrotel-Maidanak observatory equipped with 360-mm Ritchey-Chretien is started test observations recently.
Amateurs rising

Number of observations for Astrotel-Caucasus Observatory (MPC: 114)

Count

Year

2005 2006 2007 2008 2009

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Amateurs rising

For the comparison, one of the major professional observatories which study asteroids on territory of CIS – Pulkovo observatory. In last seven years Pulkovo observatory inferior to amateur Andrushivka observatory by overall amount of observations in the several times.

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Amateurs rising

Number of observations from 2002 to 2009

- Andrushivka Observatory (MPC code A50)
- Astrotel Observatory (MPC code 114)
- Pulkovo Observatory (MPC code 084)

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In recent years a new direction of astronomical observations - remote access to distant telescopes - is rapidly developed. Most of these observatories are located in the USA and Australia, but many amateurs from rest of the world have access to them.

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Remotely observation

Some observers from the CIS countries remotely use Tzec Maun observatory located in the New Mexico on the height of 2 220 meters above sea level. More than 20 new Main-belt asteroids have been discovered by CIS amateurs in this way, one of them has been already numbered and named.

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Remotely observation

Using the remote telescopes, a group of CIS amateurs have initiated the project for recovering of the short-period comets. Orbit refinement, photometric modeling, and lightcurve determination are the main goals of this project.

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As the first result of the project activity, 5 periodic comets have been rediscovered recently, and P/2002 JN16 (LINEAR) has been numbered to 221P/LINEAR.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Recovered</th>
<th>Last observed</th>
<th>Mag.</th>
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</thead>
<tbody>
<tr>
<td>69P/NEAT</td>
<td>May 19 2009</td>
<td>May 25 2006</td>
<td>19.5m</td>
</tr>
<tr>
<td>43P/Wolf-Harrington</td>
<td>May 24 2009</td>
<td>May 14 2005</td>
<td>20.0m</td>
</tr>
<tr>
<td>89P/Russell 2</td>
<td>May 24 2009</td>
<td>Nov 28 2002</td>
<td>17.9m</td>
</tr>
<tr>
<td>126P/IRAS</td>
<td>May 27 2009</td>
<td>Mar 01 1997</td>
<td>19.2m</td>
</tr>
<tr>
<td>P/2002 JN16 (LINEAR)</td>
<td>June 01 2009</td>
<td>Sep 01 2002</td>
<td>20.2m</td>
</tr>
</tbody>
</table>
Coordination

There is an intention to coordinate the observations of asteroids and comets by CIS amateur astronomers under the auspices of the International Scientific Optical Network (ISON). ISON is non-government project aimed on the development of observational astronomy in the CIS countries and many amateurs are already involved in this work.
Thank you!

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