Enhanced Activity of the 2015 Taurids

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Introduction

On the night of 31.10.2015 enhanced activity of the Southern Taurids has been observed. During evening hours dozens of bright Taurids has been observed by Polish Fireball Network cameras, 19 STA orbits has been determined, vast majority between 19:00 and 21:00UT. Two extremely bright fireballs has been observed. The first, -16 magnitude Southern Taurid has been recorded over north-western Poland at 18:05UT. The second fireball passed through the sky at 23:13UT and reached -14 magnitude. Trajectories and orbital elements of both fireballs has been calculated. Comparison of the orbital elements with available NEO databases with usage of Drummond criterion revealed close similarity to the 2005UR and 2005TF50 asteroids. Both asteroids and both fireballs are close to the 7:2 resonance with Jupiter which is consistent with earlier models (Asher, 1991). The latest comparisons with the most actual NEODYS database revealed another one asteroid - 2015TX24 which has almost identical orbit with the second observed fireball

(D' = 0.0056). 2015TX24 approached the Earth on 29.10.2015, just two days before the maximum. This asteroid can be treated as the one of the largest members of the 7:2 resonance fireball stream. Such large potential meteoroids can be directly detected by present day NEO surveys.

References

[1] Asher, D.J., 1991, The Taurid meteoroid complex, PhD thesis, New College, Oxford