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Central Bureau for Astronomical Telegrams
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ANDROMEDID METEOR SHOWER 2021

P. Jenniskens, SETI Institute and Ames Research Center, NASA, reports that significant Andromedid (IAU shower 18) activity is being detected this year by northern-hemisphere networks of the CAMS video-based meteoroid-orbit survey in the BeNeLux countries (coordinated by C. Johannink and M. Breukers), Turkey (O. Unsalan), the United Arab Emirates (M. Odeh), Florida (A. Howell), Texas (W. Cooney, D. Samuels), Arkansas (L. Juneau), Arizona (N. Moskovitz), and California (J. Albers, T. Beck). The shower was first detected on 2021 Oct. 28, when the radiant was near the ecliptic plane. The radiant slowly rose to higher ecliptic latitudes while rates increased until a broad maximum on Nov. 9, when on average one Andromedid was triangulated for every 68 sporadic meteors. After that, rates declined until a reversal occurred (cf. website URL <http://cams.seti.org/FDL/> for dates of 2021 Nov. 20-22). Starting on Nov. 20, rates have been significantly above the previous trend. On Nov. 22, there was one Andromedid triangulated for every 42 sporadic meteors, and rates appeared to be rising; on that day, the geocentric radiant was located in the constellation Andromeda at R.A. = 25.2 +/- 1.0 deg, Decl. = +39.5 +/- 0.7 degrees (equinox J2000.0), while meteors entered the atmosphere with geocentric velocities of 17.9 +/- 2.2 km/s (apparent velocity 21.0 km/s). Median orbital elements were $a = 4.5$ AU, $q = 0.828 \pm 0.013$ AU, $e = 0.816 \pm 0.128$, $i = 12.9 \pm 1.2$ deg, Peri. = 230.7 +/- 1.0 deg, and Node = 239.8 +/- 0.1 deg (equinox J2000.0). The parent comet is 3D/Biela. Note that the historic Andromedid storms from 1872 and 1885 radiated from R.A. = 27 deg, Decl. = +45 deg on Nov. 27, but no such high activity is expected this year.

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