

An Orbital Meteoroid Stream Survey using the Southern Argentina Agile MEteor Radar (SAAMER) based on a Wavelet approach

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Over a million individually measured meteoroid orbits were recently collected with the Southern Argentina Agile MEteor Radar (SAAMER) over a period of 4 years. We apply a 3D wavelet transform to these data to search for meteor showers in the Southern Hemisphere. Producing a composite year from all 4 years of data enables us to obtain an undisturbed year long meteor activity with more than one thousand meteors per day. Our automated meteor shower search methodology identified 60 showers. 26 of these showers were associated with previously recorded showers

from the IAU catalogue while 34 showers are new and not listed in the catalogue (radiant locations of newly discovered showers are shown in Figure 1). Our searching methodology, combined with our large data sample, provides unprecedented accuracy in measuring meteor shower activity and description of shower characteristics in the southern hemisphere. Using a simple modelling and clustering method, we also propose potential parent bodies for newly discovered showers.

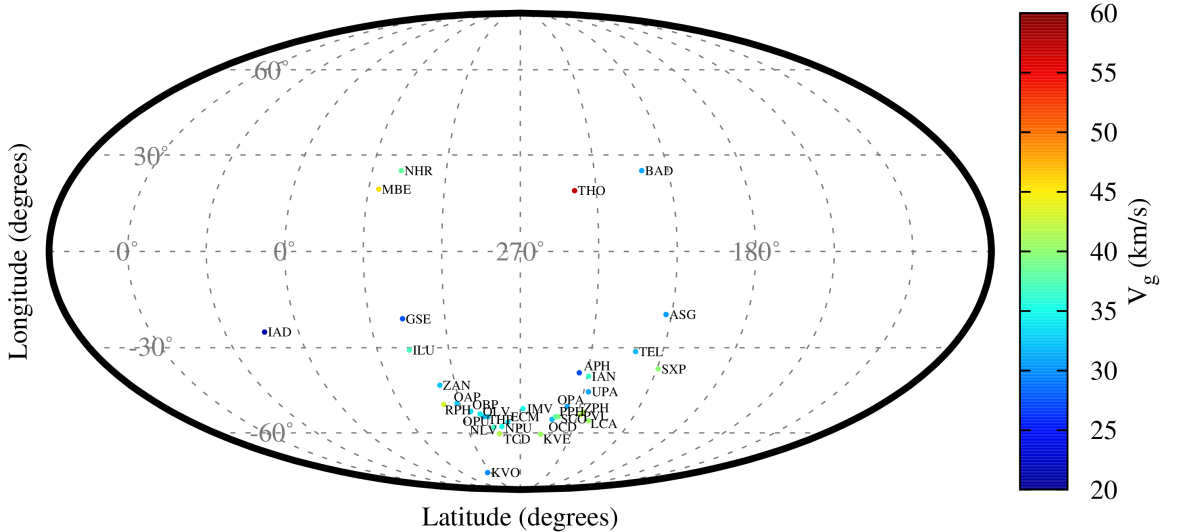


Figure 1: The radiant locations for all newly discovered showers in sun-centered coordinates color coded with their geocentric velocity v_g (colored circles) where their IAU shower codes are located next to their radiant locations. The Sun is at the origin ($0^\circ, 0^\circ$); the center of the plot ($270^\circ, 0^\circ$) is the apex of the Earth's motion.