Mini-Moon Fireball Detected by the Desert Fireball Network

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When a meteoroid approaches the Earth-Moon system at a sufficiently low relative velocity, the object can sometimes be captured. These objects are affectionately known as 'mini-moons' or temporarily captured orbiters (TCOs). Some of the objects within this unique subpopulation eventually collide with the Earth and can be detected by meteor and fireball networks on the ground. The Desert Fireball Network detected a fireball in August 2016 that, according to our models, has as high as a ~97% probability of being a TCO prior to atmospheric impact. Furthermore, orbital integration of this event also shows very interesting large annual variation in the capture statistics and capture mechanism.