An explaination of the origin of Davy Crater Chain on the Moon other than impacts of fragments comprising a comet

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The Lunar Davy crater chain (located at 11.0 ˚S , 6.3 ˚W on the Moon) is a line of about 20 craters, the averaged diameter of which is about a few km, and extends over a length of 45 km.
The origin of the formation of the Davy crater chain have not been clarified. One explanation is the collision of ejectors from a primary crater that should exist in the direction of the chain, Another one is those of the split nuclei of a comet. In both cases,however,difficulties have been pointed out.
We have studied it with high resolution ortho-image data and elevation data (Digital terrain model, DTM) obtained by the Terrain Camera onboard Japanese lunar orbiter SELENE and large area image data from LRO WAC, and found that the Davy crater chain is a group of young craters and forms an arc. We, furthermore,investigated the central direction of the arc of the Davy crater chain, and identified a young crater Lalande (4.4 ˚S, 8.6 ˚W) with about 22 km in diameter at 210 km north-northwest from the Davy crater chain.
We deduced relations for the physical parameters between a primary crater and its secondary craters and applied it to Crater Lalande and Davy crater chain for (1) the ratio of total mass released from the primary crater to mass per an ejector vs. the primary crater diameter, (2) the average of secondary crater diameters and the distance between the primary crater and (3) the secondary craters.between a primary crater and its secondary crater. The results were harmonious with the relations between other previously identified primary-secondary craters on the Moon.
We conclude that the Davy crater chain is a group of secondary craters forming an arc shape prospective from the Crater Lalande.
Furthermore, we found that Catena Aburfeda, also forming an arc, is a group of secondary craters from Crater Tycho, too.

Keywords: moon, crater chain, catena, cometary impact, secondary craters

