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Large impact craters on Mercury in longitude sector 210 - 290ºW

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A way of improving resolution of astronomical images is the reduction of their exposure to a duration during which atmospheric turbulence does not spoil a picture. A millisecond exposure method was used together with a special stacking procedure of many thousands of electronic images (Ksanfomality and Sprague, 2007). In new images the longitude sector 210 - 290ºW of Mercury (not imaged by the MARINER 10 mission) shows many large impact craters. Large craters with extended ray systems are visible in some areas. Best conditions for discerning them are at the terminator of the planet. Many craters have wide debris terraces.

The biggest of all and most noticeable crater is placed at 30ºS, 265ºW. It has a pentagonal shape and a bright fresh rim of debris blanket. The whole rim formation is estimated to have sizes of 1100 to 900 km. The outside rim is probably the excavation debris. A large dark crater (or basin) at 1ºS, 265ºW has a large, about 1000 km, rim of debris and a central hill. The centre of crater at 40ºN, 275ºW is a round 300 km very dark depression of elongated shape with a size of destroyed outer rim about 400-500 km. A bright, large (about 900 km) and probably very young crater is placed at 30ºS, 210-220ºW.

Observations were made in astrophysical observatory Skinakas, of Heraklion of university (Crete, Greece, 35º13’E, 24º54’N), in May, 2002, during evening or western elongations. The phase of Mercury was 93 - 97º. CCD-camera STV with a pixel size 7.4 õ 7.4 micrometer, was mounted on Ritchy-Chretien system telescope (D = 1.29 m, F = 9.857 m). Short expositions, basically 1 ms were used. To reduce background light of the sky, observations were made in 690-940 nanometers range. The disk of the

planet on 1-2 May 2002 was seen on the average under angle 7.75 arc sec, with its linear size 0.37 mm in a focal plane of the telescope that corresponded on a CCD-matrix to only 25 lines in a 4 pixels binned mode. The observations were carried out under extremely favorable seeing conditions (Ksanfomality *et al.* (2002).