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Spatial distribution of high-energy protons in the inner radiation belt on the data of low Earth orbit space experiments

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Measurements of the ARINA instrument on board the Resurs-DK1 satellite (altitude ~600 km and inclination ~70 degrees, since 2006 till 2016) and the VSPLESK instrument on board the International Space Station (altitude ~400 km and inclination ~52 degrees, since 2008 till 2013) in low Earth orbits were presented in this report. Both instruments are identical in terms of physical layout. They can measure high-energy protons in the range 30-100 MeV with 10% energy resolution and angular accuracy ~7 degrees. Data analysis was carried out for the total period of proton flux measurement by the instruments. L-B proton distributions in the inner radiation belt ($L < 2$) were studied in dependence on proton energy. Geographical and pitch-angle distribution of proton intensity were studied for chosen L-shells. These distributions were analyzed during the decreasing part of the 23rd solar cycle and main part of the 24th one.

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