

## Solar wind diamagnetic structures and their magnetospheric effects

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Diamagnetic structures are determined as solar wind structures, in which variations in the plasma density of the solar wind anticorrelate with the variations of the strength of interplanetary magnetic field (IMF). We distinguish two types of the structures: type 1 is related to sporadic SW, type 2 - to the quasi-stationary “slow” solar wind. The type 1 is attributed to an eruptive prominence, which forms a thin magnetic rope with a high-density plasma near the rear side of a magnetic cloud. The type 2 represents magnetic tubes (in general case, magnetic ropes) whose sources on the Sun are the streamer belt and the streamer chains or pseudo-streamers. The analysis showed that interaction of diamagnetic structures with the Earth magnetosphere generates substorm-like magnetic disturbances in the nightside magnetosphere. The disturbances are different from classical substorms because of the absence of the growth phase and of the breakup. The diamagnetic structures related to the slow solar wind cause a global modulation of the magnetic activity and of the ionospheric currents with a period close to the period of the variations in the solar wind plasma density and in the IMF inside the diamagnetic structure.

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