

CREATION OF EXTENDED DUST STRUCTURES

Pavlov S.I., Dзлиeva E.S., Novikiov L.A., Tarasov S.A.,
Yanitsin D.V., Karasev V.Y.*

SPbSU, Saint Petersburg, Russia

**s.i.pavlov@spbu.ru*

Bulk dust structures have a number of advantages over two-dimensional layers or one-dimensional chains in the study of dusty plasma. Basically, three-dimensional dust structures can be created in dust traps, which have an inhomogeneous distribution of plasma parameters. In the present paper, the creation of bulky extended dusty structures in a glow discharge is discussed; they can be effective for studying of dusty plasma in a magnetic field.

First, extended structures were created in a standing striation. The structure has two separate dust clouds localized in different "phases" of the striation. In a magnetic field, they are located in the regions of action of different rotation mechanisms and exhibit different rotation dynamics.

Secondly, extended dust structures were created in a standing striation located in a sharply inhomogeneous magnetic field. Two situations are investigated: when the striation is in a longitudinally decreasing or longitudinally increasing magnetic field. In this trap, individual dust filaments up to 10 cm long are observed, which extend beyond the end of the magnetic coil.

The work was supported by the Russian Science Foundation grant No. 22-72-10004.