

# Applied Physics

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## “Local symmetry – shape – size” relation of the channel for transport of atoms, molecules from the variation principles

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For the transfer of foreign atoms (ions, molecules) in different bodies transport channels play an important role, the transverse dimensions of which are comparable or exceed several times the size of the transported atoms (ions, molecules).

In the work it was possible to show, in an explicit form, the influence of the local symmetry type of the transport channel on its inner “radius” of the cavity. It turned out that the channel with helical symmetry has an internal radius

substantially greater than the radius of the channel with cylindrical symmetry. Since the general principle of minimal action of the system were used to clarify this situation, it can be assumed that, in most cases, when organizing transport channels for the transfer of atoms (molecules, ions), the preferred type of symmetry will be the structure of the channel showing the properties of screw symmetry.

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