

ON THE MOTION OF VORTEX RING  
IN AN INCOMPRESSIBLE MEDIUM

*O.K. Cheremnykh*

Space Research Institute, Nat. Acad. Sci. of Ukraine  
and Nat. Space Agency of Ukraine  
(40, Academician Glushkov Ave., Kyiv 03680, Ukraine;  
e-mail: *ch\_ol@space.is.kiev.ua*)

S u m m a r y

The stationary motion of an axisymmetric vortex ring in an incompressible medium, where the velocity  $\vec{v}$  and the density  $\rho$  satisfy the equations  $\text{div } \vec{v} = 0$  and  $\vec{v} \nabla \rho = 0$ , is considered. The latter equation allows the motion of a vortex ring with the density distributed in space to be analyzed. It has been shown that the density of the incompressible medium can be inhomogeneous only in the vortex motion region and is constant in the potential motion one. Taking this fact into account, the velocity of the ring and the shape of its atmosphere were found to depend not only on the geometrical dimensions of the vortex core and the amplitude of the external velocity vorticity, but also on the spatial distribution of the density in the vortex core.