Determination of the helical vortex cross section shape moving stationary in the cylindrical tube

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The shape of the helical vortex moving stationary in the cylindrical tube is analytically found in this work. Inside the core, a uniform vorticity distribution is assumed. To the solution the algorithm proposed by Norbury (1973) was used. The shape of the vortex core is found from the integral equation for the stream lines enclosed the core. The problem is reduced to finding the Fourier series decomposition coefficient.