

Modelling of cerebrospinal fluid flow is important for understanding its influence on central nervous system, especially spinal cord. One of the reasons for its study is a disease called syringomyelia that probably develops as a result of severance of neural pathways by bubbles emerging during the propagation of pressure (expansion) disturbances through spinal cord and its surroundings. It is characterized by fluid-filled cavities in spinal cord. In this thesis, a model of fluid-filled co-axial elastic tubes is proposed that can help us simulate pressure disturbances propagation through spinal cord including its interactions and possible increase as the result of interferences or reflection. We derive quasi-one-dimensional governing equations in the form of nonlinear hyperbolic system of conservational laws and with its numerical solution by two-step Lax-Wendroff method with added artificial viscosity we can quantitatively estimate almost twofold increase of pressure difference.