

The problem of the polydisperse sedimentation as the system of the partial differential equations is formulated. The hyperbolicity of the problem and the determination of the eigenvalues of the Jacobi matrix of the flux function is studied. Based on the conservation laws of the mass and momentum completed by the constitutive relations the so called MLB model is derived. The one-dimensional problem is formulated. The Sherman-Morrison formula is used to find the inverse matrix of the sum of the diagonal matrix and the matrix being the product of two vectors. In order to find the eigenvalues of the Jacobi matrix of the flux function the rank two perturbation of the diagonal matrix is used. In such a way the problem of the determination of the eigenvalues is reformulated as the solution of the so called secular equation. The eigenvalues can be localized and the strong hyperbolicity of the problem under certain conditions is proved.