

Holomorphic Eigenfunctions of the Vector Field Associated with the Dispersionless Kadomtsev-Petviashvili Equation

P. Grinevich

*L.D. Landau Institute of Theoretical Physics RAS, Chernogolovka, Russia
e-mail address: pgg@landau.ac.ru*

Vector fields naturally arise in many branches of mathematics and physics. Recently it was discovered that Lax pairs for many important multidimensional integrable partial differential equations (PDEs) of hydrodynamic type (also known as dispersionless PDEs) consist of vector field equations. These vector fields have complex coefficients and their analytic, in the spectral parameter, eigenfunctions play an important role in the formulations of the direct and inverse spectral transforms.

We prove existence of eigenfunctions of the basic vector field associated with the celebrated dispersionless Kadomtsev-Petviashvili equation, which are holomorphic in the spectral parameter λ in the strips $|\operatorname{Im} \lambda| > C_0$.