Solution Formula of Korteweg Type by Using Partial Fourier Transform Methods in Half-Space without Surface Tension

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Abstract	Sharp-interface models and diffuse-interface models are the two basic types of models that describe liquid-vapour flow for compressible fluids. Their depictions of the line dividing liquid from vapour are different. The interface is modeled as a hypersurface in sharp-interface models. Sharp-interface models are free-boundary problems from a mathematical perspective since the position of the interface is a priori unknown and therefore a component of the solution to the free-boundary problem. A unique system of partial differential equations describes the motion of the fluid in the liquid and vapour phases, respectively. At the interface, boundary conditions between these systems are connected.. A mathematical model for liquid-vapour flows including phase transition known as the Navier-Stokes-Korteweg system which is the extension of the compressible Navier-Stokes equations. The purpose of Ihis article, we consider the soluton formula of Korteweg fluid model in half-space without surface tension. Since we consider in half-space case, Partial Fourier transform become appropriate method to find the formula of velocity and density for Korteweg type. The solution formula of the model problem for the velocity (u) and the (Ã•Â†) are obtained by using the invers of partial Fourier transform. It consist multipliers. For the future research, we can investigate the estimation of the multiplier. Furthermore, by using WeisÃ¢Â€Â™s multiplier theorem we can find not only maximal Lp-Lq regularity class, but also we can consider the local well-posedness of the model problem.Ã‚Â
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