A finite element approach derived from the simplified variational principle

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In previous papers, we have described how by minimizing the fluid action numerically one can obtain a solution of the fluid steady state equations. The action which was used was the four function action of Seliger & Whitham. In a recent paper, Yahalom & Lynden-Bell described how one can improve upon previous art by reducing the number of variables in the action. Three independent functions variational formalism for stationary and non-stationary barotropic flows were introduced. This is less than the four variables which appear in the standard equations of fluid dynamics which are the velocity field and the density \( \rho \). Here we suggest a finite element approach to solve the reduced equations.

Biography
Asher Yahalom is a Professor in the Faculty of Engineering at Ariel University and the Academic Director of the Free Electron Laser User Center which is located within the university center campus. He received BSc, MSc and PhD degrees in Mathematics and Physics from the Hebrew University in Jerusalem, Israel in 1990, 1991 and 1996 respectively. He was a Postdoctoral Fellow in 1998 at the Department of Electrical Engineering of Tel-Aviv University, Israel. He was a Visiting Fellow at the University of Cambridge, UK during the years 2005-2006, 2008 and 2012.

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