

ON A NEW CLASS OF MIXED HEMIVARIATIONAL-VARIATIONAL INEQUALITIES*

W. Han[†]

DOI <https://doi.org/10.56082/annalsarscimath.2023.1-2.330>

Dedicated to Dr. Dan Tiba on the occasion of his 70th anniversary

Abstract

In this paper, we study a new class of mixed hemivariational-variational inequalities in which both the non-smooth convex functional and the non-smooth non-convex functional can depend on two arguments. We present solution existence and uniqueness results. Then, we apply the theoretical results on a mixed hemivariational-variational inequality in the study of a stationary incompressible flow of Bingham type fluid subject to non-smooth non-monotone slip boundary condition.

MSC: 49J40, 35J50, 76A05, 76D03.

keywords: Mixed hemivariational-variational inequality, well-posedness, Banach fixed-point, Bingham type fluid

*Accepted for publication in revised form on April 26, 2023. The work was supported by Simons Foundation Collaboration, USA Grants, No. 850737, and by the European Union's Horizon 2020 Research and Innovation Programme under the Marie Skłodowska-Curie Grant Agreement No. 823731 CONMECH.

[†]E-mail: weimin-han@uiowa.edu. Department of Mathematics, University of Iowa, Iowa City, IA 52242-1410, USA