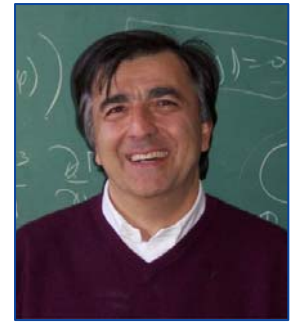




# Non-linear flows in porous media and related topics in PDE



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**Friday, January 23, 2:30 pm**  
**Pickard Hall, Room 304**

## **Abstract:**

The mathematical modeling and analysis of non-linear flows in porous media is quickly becoming a key to solving many challenging problems in engineering and applied science. Most studies in porous media are based on Darcy's law, which describes a linear relationship between the pressure gradient and the fluid velocity. However, almost immediately after Darcy's discovery, his student Dupuit observed on field data that the linear relation is no longer valid for high velocity values. Later, Forchheimer in his famous book reported a number of experimental data underlining these discrepancies, and constituted three different empirical formulae to interpret these results.

In the current talk we will introduce an approach, which will cover all three Forchheimer equations within framework of non-linear parabolic equation.

We will present results related to qualitative properties of the solutions of corresponding IBVP and application to engineering and physical problems.

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The Math Department will provide refreshments 30 min. prior to the presentation.