

## BOUNDARY DATA COMPLETION AS A TOOL FOR LEAKS DETECTION

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**Summary:** This work is concerned with the severely ill-posed Cauchy-Stokes problem. We are interested in a data completion problem which is exploited to detect small leaks to control water loss [6]. Leaks detection is a problem which can be useful for the losses of water. In our approach, the leaks are detected by solving a Cauchy Stokes system.

In this problem we rephrase the Cauchy Stokes system on a minimisation of energy-like error functional see [2,5]. In order to reconstruct the unknown boundary data on the inaccessible boundary, we will use the first order optimality conditions which leads to an interfacial problem [3]. At each step, we apply a preconditioned iterative gradient algorithm, which appears to be very efficient see [2]. Numerical experiments illustrate the robustness of the method.

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