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**HYBRID EXPERIMENTAL-NUMERICAL APPROACH TO SOLVE**

**INVERSE CONVECTION PROBLEMS**

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**ABSTRACT** A methodology is developed to utilize both experimental and numerical information in solving inverse convection problems. The method used combines an empirical relationship with a regularization scheme. The method is applied to a plume generated by an electrically heated copper block set within a small wind tunnel to provide cross flow. This approach attempts to solve for, within acceptable error, the source location and source temperature, which are not known a priori. A key factor in practicality of the approach is limited experimental sampling. Results show typical methodology errors of less than 1% for source temperature and 5% for source location. Results of combined experimental, experimental-numerical, and methodology errors were found to be typically less than 3% for source temperature and 6% for source location. The paper presents the basic methodology, typical results obtained, and the accuracy of the predictions. Practical problems, where this approach may be useful, are outlined.