COMPARISON OF THREE REGULARIZED SOLUTION TECHNIQUES IN A THREE-DIMENSIONAL INVERSE RADIATION PROBLEM

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ABSTRACT. Inverse methods provide a good alternative to traditional trial-and-error methods for design of thermal systems. The inverse boundary condition estimation problem in radiating enclosures involves the solution of an ill-posed system that requires regularization to obtain a reasonable physical solution. This study compares three different regularized solution techniques that can be used in the inverse boundary condition estimation problems in a three-dimensional radiating enclosure. The regularized solution techniques covered in this study are the conjugate gradient method, bi-conjugate gradient method and truncated singular value decomposition.