

## Approximating the fixed point of an affine operator

M. I. Berenguer<sup>a</sup>, M. Ruiz Galán<sup>b</sup>

<sup>a,b</sup> Department of Applied Mathematics and Institute of Mathematics (IMAG), Escuela Técnica Superior de Ingeniería de Edificación, University of Granada, 18071 Granada, Spain  
maribel@ugr.es, mruizg@ugr.es

We propose an algorithm for iteratively approximating the fixed point of a contractive affine operator. It is based on a perturbed version of the classic geometric series theorem, the error control that this provides, and the use of projections associated with certain Schauder bases. This is illustrated for a wide group of affine problems chosen for its great versatility, the linear Fredholm integral equations. Finally, we present some numerical examples in order to illustrate the behavior of the proposed method.

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