



DENSITY INTERPOLATION METHODS

Carlos Pérez

Ph.D. in applied and Computational
Mathematics, California Institute of
Technology (EE.UU, 2016).

Profesor Asistente,
Instituto de Ingeniería Matemática y
Computacional UC.

Abstract

Abstract. I will present ongoing work on a class of effective and simple-to-implement methods for the numerical evaluation of boundary integral operators and layer potentials in two and three spatial dimensions. These methods rely on the use of Green's third identity and local Taylor-like interpolations of density functions in terms of homogeneous solutions of the underlying PDE. The proposed technique effectively regularizes the singularities present in boundary integral operators and layer potentials, and recasts the former in terms of integrands that are bounded or even more regular, depending on the order of the density interpolation. The resulting boundary integrals can then be easily, accurately, and inexpensively evaluated by means of standard quadrature rules. A variety of numerical examples demonstrate the effectiveness of the technique in the context of Nyström and boundary element methods for the Laplace and Helmholtz equations.

This is joint work with Catalin Turc (Department of Mathematical Sciences, NJIT) and Luiz Faria (Laboratoire POEMS, INRIA).

SEMINARIO

17 DE ABRIL
14 HRS

AUDITORIO SAN AGUSTÍN
CAMPUS SAN JOAQUÍN UC



@IMC_UC



+562 23541100



imt@ing.puc.cl



imc.uc.cl