

**Ivanov, Tjavidar; Maz'ya, Vladimir; Schmidt, Gunther**

**Boundary layer approximate approximations and cubature of potentials in domains.** (English) [Zbl 0935.65128](#)

Adv. Comput. Math. 10, No. 3-4, 311-342 (1999).

The authors present a new approach to the computation of volume potentials over bounded domains. It is based on quasi-interpolation with smooth, almost locally supported basis functions for which particular solutions are known. Some asymptotic error estimates for quasi-interpolation and corresponding cubature formulae as well as numerical examples which illustrate the behaviour of the error near the boundary are carried out.

Reviewer: [C.I.Gheorghiu \(Cluj-Napoca\)](#)

**MSC:**

- [65N38](#) Boundary element methods for boundary value problems involving PDEs
- [65N15](#) Error bounds for boundary value problems involving PDEs
- [65D32](#) Numerical quadrature and cubature formulas
- [35J05](#) Laplace operator, Helmholtz equation (reduced wave equation), Poisson equation

Cited in **1** Review  
Cited in **4** Documents

**Keywords:**

volume potentials; semianalytic cubature formulae; boundary layer; multi-resolution; quasi-interpolation; error estimates; numerical examples

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