Invitation for Submissions for the Special Issue / Topical Collection
“Advances in Computational Integral Equations” (ACIE)
in the journal Advances in Computational Mathematics (ACOM)

Objective:
Integral equation methods bring tremendous advantages for the numerical solution of a wide variety of partial differential equations in complex geometries. Their representations are efficient, naturally handling unbounded domains, and they respect the physical conditioning of the underlying problem. The last 30 years has seen incredible advances in the both the mathematical theory and computational tools needed for their efficient and accurate numerical solution, such as: fast iterative and fast direct solvers for the resulting linear systems in low- and high-frequency regimes (building upon the fast multipole method of Greengard and Rokhlin), new representations, and high-order quadratures. Yet many challenges remain, and the research community is active and growing.

This collection was originally intended to pair with the workshop “Challenges in Computational Methods for Integral Equations” (OCCMIE) at the Casa Matematica Oaxaca (affiliated with BIRS), but, unfortunately due to COVID-19 that workshop will not happen before 2022. Thus, the collection will be independent of any workshop. Submissions from the global research community will be handled by the board listed below via ACOM’s usual peer-review process.

Time Schedule:
Submission deadline:
- August 31, 2020
- March 31, 2021
Please contact the guest editorial board with any questions.

Guest Editors:
The organizers of OCCMIE along with other researchers will act as Guest Editorial Board for the special issue:

- Stephanie Chaillat (POEMS, CNRS-ENSTA-INRIA, France)
- Adrianna Gillman (University of Colorado, Boulder, USA)
- Per-Gunnar Martinsson (University of Texas, Austin, USA)
- Michael O’Neil (Courant Institute, NYU, USA)
- Alex Barnett (Flatiron Institute, USA)
- Mary-Catherine Kropinski (Simon Fraser University, Canada)
- Timo Betcke (University College London, UK)

This board is chaired by Michael O’Neil.