Integral equations' methods for the numerical solution of partial differential equations

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The course will focus on the following topics:

- Definitions, properties and applications of integrals defined as Cauchy principal value or Hadamard finite part;

- Examples of stationary partial differential problems which are reducible to weakly singular, singular, or hypersingular integral equations. Numerical methods for their solution;

- Examples of time-dependent problems defined on unbounded domains and their reformulation as integral equations in the space-time domain. Use of the latter also as a non-reflecting condition on an artificial boundary that delimits the physical domain of interest. Numerical methods for their solution.