



DEPARTAMENTO DE
ANÁLISIS MATEMÁTICO Y
MATEMÁTICA APLICADA



SEMINARIO DE ANÁLISIS MATEMÁTICO Y MATEMÁTICA APLICADA

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Robust topology optimization using the Bernstein approximation

In this talk we present a novel topology optimization approach for the robust design of structures. The method considers both deterministic and random loadings and minimizes the compliance subject to a constraint on the volume, as well as a constraint on the failure probability. Handling the failure probability is often challenging in numerical terms, but we address it by employing the Bernstein approximation, which leads to a model that has the remarkable property of being a linear conic programming problem. Furthermore, we derive a more efficient reformulation of the problem, involving small semidefinite constraints. To demonstrate the practicality of the proposed method, we provide with solutions to several examples of truss topology optimization.

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