



Hamilton Institute

Mathematical Challenges in the
Electronics Industry

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Abstract:

Mathematical challenges arise in several stages of the design and production processes in the electronics industry. During the design of very large-scale integration (VLSI) chips, for instance, dynamical systems are used to describe the low-level circuit behavior. At higher levels, on the other hand, engineers have to consider trade-offs between possibly conflicting objectives.

Since the designs and dynamical systems can become very large for modern chips, the essential simulation before production may consume hours or days of computing time. Hence there is need for efficient mathematical approaches that limit the computing time while preserving the accuracy and allow for optimization with respect to conflicting objectives. In this talk we will give an overview of typical mathematical challenges in the electronics industry, and we will discuss some solution methods in detail, including model order reduction, large-scale Lyapunov solvers, specialized eigenvalue solvers, and graph algorithms.

Venue: Seminar Room, Hamilton Institute, Rye Hall,
NUI Maynooth

Time: 2.00pm - 3.20pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie