Applied Mathematics

CRM-McGill Applied Mathematics Seminar

Oct. 2 , 2006, 2:35 pm Monday
At McGill, Burnside Hall 1205

"Managing the complexity of electronic design automation "

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Coffee and refreshments will be served after the seminar

Abstract: As integrated circuit IC technology advance and devices shrink well into the nanometer range designers are faced with many new challenges stemming from increased system complexity. This complexity is due to two main factors. The first factor is related to the increasing circuit sizes that can be integrated as well as complex device behaviours that appear as the frequencies increase and the device sizes shrink (e.g. transmission line effects, leakage current, yield issues due to device uncertainty). The second factor is due to the more complex models that are required in the simulation (e.g. full wave models based on Maxwell's equations, transmission line models based on the telegrapher's equations and more complex device models). This increasing model complexity, coupled with the increasing circuit sizes is pushing the limits of current design automation tools. In short, designers are faced with two complementary problems. The increased circuit complexity renders design automation tools more necessary that ever before, while at the same time this same complexity is rendering these tools ineffective in dealing with current designs. In this talk, some of the key simulation difficulties facing electronic design automation will be discussed, and recent research results which address some of these issues will be presented.