My $\mathcal{O}$ Is Bigger Than Yours*

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Abstract

This invited talk starts off with a review of probabilistic safety assessment (PSA) methods currently exercised across the nuclear power plant domain worldwide. It then elaborates on crucial aspects of the Fukushima Dai-ichi accident which are not considered properly in contemporary PSA studies [6, 8, 7]. New kinds of PSA are needed so as to take into account external hazards, dynamic aspects of accident progression, and partial information. All of these come with obvious increases in algorithmic analysis complexity. This motivates our ongoing work to gradually tackle the resulting modelling and analysis problems. They revolve around static and dynamic fault trees [5, 1], open interpretations of compositional Markov models [2, 4] and advances in their effective numerical analysis [3].

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