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Advanced engineering simulators for safe operation of nuclear reactors

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When any engineering device is designed, there is a fundamental question that needs to be answered: Will the product fail under operating condition? And if yes, how long does it take? The answer to this question is extremely important, especially for the products in which their safety and economic operation is imperative, e.g. a car engine, a gas vessel, or a nuclear reactor. To access accurately the life cycle of these engineering products, there has been an increasing interest in the past decade in the engineering simulators. The more advanced features these simulators have, the more reliable they are. In my PhD studies at the Mechanical and Materials Engineering department of Western University, I have been working on the development of such an advanced simulator which can be used in the nuclear energy sector.