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Advancing Pool Scrubbing Simulations: from Traditional to AI Methods

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As shown in Fukushima Daiichi accidents, radioactivity absorption in water ponds (pool scrubbing) is highly efficient in mitigating Source Term to the environment during Severe Accidents (SA). Therefore, SA analytical tools should include an accurate modelling that provides reliable insights into pool scrubbing effects and reduces the overall uncertainties in fission products released to the environment. The last goal of this PhD project will aim to make a visible improvement of safety analysis of nuclear power plants. All the potential approximations to modelling Source Term attenuation in pools will be explored, from correlations to mechanistic modelling both in 0D and 3D approach and enhanced to the best of their capabilities to develop a definitive sound modelling. Such a development will be thoroughly validated and its uncertainties properly characterized in risk-relevant accident scenarios.

Technical Track

Safety and Severe Accidents

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