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Editorial: Rising stars in nuclear energy: 2022

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Editorial on the Research Topic Rising stars in nuclear energy: 2022

Nuclear provides over 50% of American clean energy ([DOE Office of Nuclear Energy, 2022](#)), as one of the most realistic solutions to the global energy supply risk ([Cui et al., 2023](#)). The conventional neutronic, thermal hydraulics, Instrumentation and Control technologies are mature and being used in the Gen IV reactor designs ([Locatelli et al., 2013](#)). Meanwhile, advanced materials, machine learning and multi-physical technologies are being developed and push the advances in nuclear energy.

Tens of thousands of the young generation of nuclear scientists and engineers are making this happen. This Research Topic collects several articles, to show some of their contributions. The content covers three aspects: machine learning, advanced numerical calculation, and basic thermal hydraulics.

The machine learning parts collect two articles, the “Deep Learning Health Management Diagnostics applied to NIST Smoke Experiments” by ([Hoppman et al.](#)); and “Combinatorial Techniques for Fault Diagnosis in Nuclear Power Plants Based on Bayesian Neural Network and Simplified Bayesian Network-Artificial Neural Network” by ([Qi et al.](#)).

The advanced numerical calculation parts collect two articles, the “Influence of structural and operating factors on mixing transfer of rotary energy recovery device through CFD simulation” by ([Liu et al.](#)); “Numerical investigation of cooling ability in heat-generating porous debris bed after severe accident in PWR” by ([Xu et al.](#)).

The basic thermal hydraulics parts collect two articles, the “Study on the influences of RPV deformation on CHF under IVR conditions” by ([Wen et al.](#)), and the “Hierarchical entropy analysis for flow pattern of steam-liquid two phase flow in a rod bundle” by ([Zhang et al.](#)).

Due to the limit of time and network, there are various great jobs that cannot be collected into this Research Topic. However, there will be similar Research Topic in the future and all articles are welcome.

Author contributions

JW is the leading and corresponding author, all others are contributors. All authors contributed to the article and approved the submitted version.

Conflict of interest

Author GV was employed by Nuclear Safety Consultancy Netherlands.

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