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Dr. Jun YANG received his Ph.D. degree in nuclear engineering from Harbin Engineering University, China, in 2017. He also studied as a visiting scholar at the Ohio State University from 2014 to 2016. He is currently an associate professor with South China University of Technology, Guangzhou, China. His research interests include nuclear safety and simulation, dynamic reliability analysis and probabilistic risk assessment, prognostics and health management, big data analytics, intelligent operator support system technologies. He has published over 50 papers at leading conferences and journals such as IFAC, ICONE, RESS, IEEE series etc.

III-1 Report of research project on the key technologies for intelligent risk-informed decision support system for nuclear safety and emergency response management with highlighting upgrade of GO-FLOW for success path planning and exact quantification support.

Abstract

In the presentation, the research progress and accomplishments of an international collaborative project on the key technologies for intelligent risk-informed decision support system for nuclear safety and emergency response management are presented. The objectives of the project focus on: i) risk layering for safety supervisory and management; ii) an enhanced modeling and analysis platform to be developed for dynamic reliability and risk analysis; iii) success path planning for emergency response management in the early stage of accident mitigation and recovery. A decision support system augmented with a hybrid compute engine and a goal-oriented success path planner is designed and developed for nuclear safety and emergency response management. The latest innovations of GO-FLOW method for success path planning and exact quantification support with both Minimal Path Sets (MPSs) and Minimal Cut Sets (MCSs) will also be in detail discussed.