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钠冷快堆钠池火事故数值模拟

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摘要 为了估计和预测钠火事故的后果,构建了以“有火焰薄层”为理论基础的燃烧模型和热传输模型,给出了程序计算结果与试验值的比较。比较结果证实,该计算结果可信、模型合理。程序可用于分析和预测钠池火事故。

关键词 [钠冷快堆](#) [钠池火](#) [火焰薄层](#)

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Numerical Simulation of Sodium Pool Fires in Liquid Metal-Cooled Fast Breeder Reactor

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Abstract In Liquid Metal-Cooled Fast Breeder Reactor(LMFBR),the leakage of sodium can result in sodium fires.Due to sodium's high chemical reactivity in contact with air and water,sodium fires will lead to an immediate increase of the air temperature and pressure in the containment.This will harm the integrity of the containment.In order to estimate and foresee the sequence of this accident,or to prevent the accident and alleviate the influence of the accident,it is necessary to develop programs to analyze such sodium fire accidents.Based on the work of predecessors,flame sheet model is produced and used to analyze sodium pool fire accidents.Combustion model and heat transfer model are included and expatiated.And the comparison between the analytical and(experimental) results shows the program is creditable and reasonable.This program is more realistic to simulate the sodium pool fire accidents and can be used for nuclear(safety) judgement.

Key words [liquid metal-cooled fast breeder reactor](#) [sodium pool fire](#) [flame sheet](#)

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