# 含可燃毒物的压水堆堆芯装料优化

石秀安，刘志宏，胡永明

清华大学 核能与新能源技术研究院，北京100084

摘要　　含可燃毒物的压水堆堆芯装料优化是燃料管理优化研究中的难点。应用通常的优化算法效率低、全局性差，特征统计算法更适合求解该优化问题。本研究克服了原特征统计算法装料优化将组件布置(LP)优化和新组件可燃毒物配置(BP)优化脱耦处理的缺陷，对LP和BP同时进行优化，结合堆芯分析程序CYCLE2D，成功地研制了压水堆LP和BP耦合优化程序CSALPBP。用该程序对大亚湾2号机组第10循环进行了堆芯装料优化计算。结果表明：CSALPBP程序具有很高的搜索效率和很好的全局性。

关键词　　压水堆　可燃毒物　装料优化　特征统计算法　耦合优化
分类号　TL421.1

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| · 胡永明 |

# Reloading Optimization of Pressurized Water Core With Burnable Absorber Fuel

SHI Xiu-an, LIU Zhi-hong, HU Yong-ming

Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing 100084, China

**Abstract**  The reloading optimization problem of PWR with burnable absorber fuel is very difficult, and common optimization algorithms are inefficient and have bad global performance for it. Characteristic statistic algorithm (CSA) is very fit for the problem. In the past, the reloading optimization using CSA has shortcomings of separating the fuel assemblies' loading pattern (LP) optimization from burnable absorber's placement (BP) optimization. In this study, LP and BP were optimized simultaneously using CSA coupled with CYCLE2D, which is a core analysis code. The corresponding reloading coupling optimization software, CSALPBP, was developed. The 10th cycle reloading design of Daya Bay Nuclear Power Plant was optimized using CSALPBP. The results show that CSALPBP has high efficiency and excellent global performance.

**Key words**  pressurized  water  reactor  burnable  poison  loading  optimization  characteristic  statistic  algorithm  coupling  optimization

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