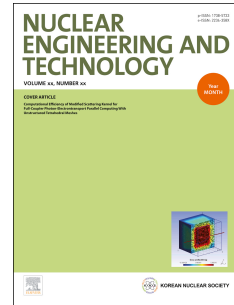


# Accepted Manuscript

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Luyuan Chen, Xinyi Zhou, Fuyuan Xiao, Yong Deng, Sankaran Mahadevan



PII: S1738-5733(16)30201-7

DOI: [10.1016/j.net.2016.10.003](https://doi.org/10.1016/j.net.2016.10.003)

Reference: NET 273

To appear in: *Nuclear Engineering and Technology*

Received Date: 20 November 2015

Revised Date: 29 July 2016

Accepted Date: 21 October 2016

Please cite this article as: L. Chen, X. Zhou, F. Xiao, Y. Deng, S. Mahadevan, An Evidential AHP Dependence Assessment Methodology in Human Reliability Analysis, *Nuclear Engineering and Technology* (2016), doi: 10.1016/j.net.2016.10.003.

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## An Evidential AHP Dependence Assessment Methodology

### in Human Reliability Analysis

Luyuan Chen<sup>a</sup>, Xinyi Zhou<sup>a</sup>, Fuyuan Xiao<sup>a</sup>, Yong Deng<sup>a,b,c,\*</sup>, Sankaran Mahadevan<sup>b</sup>

<sup>a</sup> School of Computer and Information Science, Southwest University, Chongqing, 400715, China

<sup>b</sup> School of Engineering, Vanderbilt University, Nashville, TN, 37235, USA

<sup>c</sup> Institute of Integrated Automation, School of Electronic and Information Engineering, Xi'an Jiaotong University, Xian, Shanxi, 710049, China.

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#### Abstract

In a Human Reliability Analysis (HRA), dependence assessment is an important issue in the risky large complex systems, such as operation of a nuclear power plant. Many existing methods depend on an expert's judgement, which contributes to the subjectivity and restrictions of the results. Recently, a computational method based on Dempster-Shafer Evidence Theory (DSET) and the Analytic Hierarchy Process (AHP) to handle the dependence in HRA has been proposed. The model can deal with uncertainty in an analyst's judgment and reduce the subjectivity in the evaluation process. However, the computation is heavy and complicated to some degree. The most important issue is that the existing method is in a *positive* aspect, which may cause an underestimation of the risk. In this article, a new evidential AHP dependence assessment methodology is proposed to be more easy and effective based on the improvement of existing methods.

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\*Corresponding author: Yong Deng, School of Computer and Information Science, Southwest University, Chongqing, 400715, China. Email address: ydeng@swu.edu.cn; ydeng@xjtu.edu.cn; prof.deng@hotmail.com

*Preprint submitted to Nuclear Engineering and Technology July 14, 2016*

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