



# ソフトウェア開発における設計過程への 品質工学的手法の導入

## *Introduction of Quality Engineering Methodology into the Design Process in Software Development*

前田 敏男\*  
Toshio Maeda

武澤 泰則\*  
Yasunori Takezawa

天谷 浩一\*  
Koichi Amaya

矢野 宏\*\*  
Hiroshi Yano

Integrated software debugging methods using orthogonal arrays have become an in-house standard that is frequently applied, but the applications have been limited to the later stages of the design process, so a study was undertaken with the object of application to the entire software design process during in-house software development. The study began with the in-house standardization of the integrated debugging methodology, which was then applied to unit debugging using small orthogonal arrays, and applications were then expanded to include checking methods during the design process, working from downstream to upstream in the design flow. The design flow was also reconsidered, the checking system and the points at which it was to be applied were studied, and improvements were implemented. Finally, the application of parameter design to software design was studied and a proposal was made. The generic function of software was defined as stable functioning and operation with a variety of settings in a variety of usage environments. After signal factors were assigned to an orthogonal array and debugging personnel were assigned as noise factors, debugging was carried out and the bugs that were found were evaluated. The following is an in-house case study report, including the results of a study of the effects obtained and further issues.

**Key words** : Taguchi methods, quality engineering, orthogonal array, software debugging, design process

### 1. はじめに

工作機械や機械加工システムにおけるソフトウェアは、高度でかつ複雑なシステムとなり、このよう

なソフトウェアのバグのチェックは生産工程における重要項目である。品質工学ではソフトウェアの指令を全て信号因子として、直交表の活用によりバグをチェックする方法が提案され<sup>1)</sup>、実際に活用されている<sup>2)</sup>。

しかし、設計後のソフトウェアのチェックによりバグを見つけ出すことが効率化されても、ソフトウ

\* (株)松浦機械製作所, 正会員

\*\* 応用計測研究所(株), 正会員