

**Application of Formal Methods to Signalling Systems  
using Techniques based on Stepwise Refinement**

Natsuki TERADA

It is anticipated that Formal methods are beneficial to increase reliability of software. In preparing formal specifications of complicated systems from a preliminary draft text, stepwise revisions are very effective to prepare the specifications to understand readily and to realize verified codes that satisfy the specifications. In this report, we first explain the concept of gradual revisions. In writing an abstract specification with minimal conditions initially, then refine the specifications more precisely until they are ready to be serviceable. Next, we present an example, in which allowable speed of train as calculated when the distance to stop is given.