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These proceedings contain the results that have been obtained during the Study Group Mathematics with Industry, which was held at the University of Twente in the Netherlands from January 28th until February 1st, 2008. During such Study Group weeks, mathematicians and other people with a strong interest in mathematics work on a several problems that have been formulated by industrial partners. The idea being that the participants try to solve these problems during one week with mathematical techniques.

In 2008 there were 78 participants from various countries, who together attacked six problems. These varied from problems on larger scales, such as the optimal arrangement of trains and large sensor networks, the modeling of aluminium alloys, and the drainage of rain water, to two problems on much smaller scales, one of which involved neurons in the brain and the other one mobile phone electronics. The reader will notice when studying the articles that substantial progress has been made on all problems and in some cases concrete solutions have already been proposed.

These scientific proceedings are accompanied by a separate booklet in Dutch, in which the results have been described for a wider non-scientific audience by journalist Bennie Mols.

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In closing, we thank all the participants for their outstanding contributions to an inspiring week of industrial mathematics.

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