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Overview of DMCS Projects and MicroTCA.4 Developments

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The Lodz University of Technology, Department of Microelectronics and Computer Science is involved in the development of MicroTCA.4, MicroTCA.4.1 and the future standards from 2007 onwards. Since that time, we have developed various MicroTCA.4 components including Intelligent Platform Management, Advanced Mezzanine Cards (AMCs), Rear Transition Modules (RTMs) for data acquisition and processing systems used in numerous accelerators and fusion projects.
The presentation discusses selected projects currently performed at our department based on the MicroTCA.4 technology.
Firstly, a scalable framework supporting various camera standards based on the MicroTCA.4 technology will be shown as an example of a powerful image acquisition and processing system dedicated for large-scale physics projects, such as ITER, Wendelstein 7-X or Eu-XFEL.
Secondly, the extension of the IPMI specification and further support for FMC modules based on the developed prototype are discussed and a smart MMC solution is demonstrated on the example of a cost-effective but efficient AMC module that we have developed for the W7-X stellarator.
Finally, the progress of developing the high-power piezo driver (HPD-200) for the European Spallation Source (ESS) accelerator will be presented as an instance of enormous challenge breaking the limitations of the MicroTCA specification.

Summary

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