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Time resolved cryogenic cooling analysis of the Cornell Injector Cryomodule

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Managing parallel cryogenic flows has become a key challenge in designing efficient and smart cryo-modules for particle accelerators. In analyzing the heating dynamics of the Cornell high current injector module a power-full computational tool has been set-up allowing time resolved analysis and optimization. We will describe the computational methods and data sets we have used, report the results and compare them to measured data from the module being in good agreement. Mitigation strategies developed on basis of this model have helped pushing the operational limitations.

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