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## **How to safely reach higher energies and intensities? Settings and commissioning of Machine Protection Systems for 5TeV operation (BIC, SMP, LBDS, BPM, BCT, PIC ...)**

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The LHC Machine Protection System has been commissioned in November and December 2009 for low intensity and low energy beam operation. During this period interlocks were activated step by step and masking of channels was used regularly to improve the commissioning efficiency. As intensity and energy are increased this flexibility will be lost as the machine has to be protected at all times. It is therefore essential that all protection functionality must be commissioned at low intensity.

Intensity and energy must be increased progressively, and every new step in energy or optics must be performed at low intensity. The steps that must be performed at the various stages will be outlined. The issues related to masking of interlock channels will be discussed.

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