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BLM in the context of machine protection

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Any particle accelerator with damage potential in its beams or its machine components requires a potent machine protection system. High power particle beams, or beams with a high power density, can directly damage accelerator structures, whilst beam induced heating of superconducting structures can trigger a phase transition to the normal conducting state (quench). A good beam loss monitoring (BLM) system is therefore one of the key elements for machine protection. Such a system can either directly trigger a fast beam abort or inhibit subsequent beam pulses, depending on criticality and machine type. This talk discusses the role of a BLM system in machine protection, including aspects related to beam transfer and collimation with the real life experience of LHC BLM operation serving as illustrative examples. Dependability and design criteria are also reviewed.

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