

## ***Review of Powering Issues – Past, Present and Future***

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### *Abstract*

*Following the near catastrophic quench event in September 2008, the LHC magnets had their fields, and inherent accelerating capabilities, limited to the maximum safe values. Since then, the challenge of establishing the causes of such an event and ensuring that it is not likely to reoccur has been of paramount priority.*

*The main topic of the talk is to discuss the significant powering issues and causes of beam dumps over the last three years of operation, correlating individual system statistics, year-to-year, with intermittent systems changes/upgrades.*

*Furthermore, the talk will look at particular “near-miss” failure events, their potential repercussions on major systems at nominal current and what can be done to ensure that this is never the case.*

*To complement this, predictions of the systems most likely to cause issues whilst operating at higher energies will be discussed, taking into account mitigation proposals, system changes and upgrades intended for LS1 as well as preliminary results of the end-of-run powering tests.*