Title: An adaptative simulation of the LHC optics

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The beam dynamics in LHC requires a tight control of the magnet field quality and geometry. As the production of the magnets advances, decisions have to be on the acceptance of possible imperfections. To ease decision making, an adaptative model of the LHC optics has been built, based on the information available on the day (e.g. magnetic measurements at warm or cold, magnet allocation to machine slots) as well as on statistical evaluations for the missing information (e.g. magnets yet to be built, measured, or for non-allocated slots). The uncertainties are included: relative and absolute measurement errors, warm-to-cold correlations for the fraction of magnets not measured at cold, hysteresis and power supply accuracy. A pre-processor generates instances of the LHC ring for the MADX program, with the possibility of selecting various error sources. A post-processor computes ranges for relevant beam optics parameters and distributions. This approach has been applied to the expected beta-beating, to the possible impact of permeability issues in some quadrupole collars, to the geometrical displacements of the multipolar correctors and to prioritize the magnetic measurement programme.