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# Characterization of GEM foils and materials: simulation, measurements and interferometric monitoring tools

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The GE1/1 CMS project consists of 144 GEM chambers of about 0.5 qm active area each, based on the triple GEMs technology, to be installed in the very forward region of the CMS endcap during the long shutdown of LHC in 2108-2019. GE1/1 chambers will be operated for decades in harsh environment, and are expected to perform consistently providing good space and time resolution and excellent rate capabilities. An extensive material science simulation and measurement campaign is in progress to characterize GEM materials, with main focus on the GEM foils. Results are presented on full Finite Element Analysis simulations, measurement of tensile properties and humidity absorption coefficients, both for unused and irradiated samples. Preliminary results are shown on interferometric methods based on Moirè fringes for the monitoring of GEM foils' mechanical properties during chamber construction.

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