

Simulations, Design and Prototyping of the BPM buttons for SOLEIL II

SOLEIL II is the low emittance upgrade project for Synchrotron SOLEIL, targeting an emittance of ~ 80 pm.rad. The new lattice includes 180 Beam Position Monitors (BPM). Due to the different constraints on the magnet yokes, beam stay clear and synchrotron radiation, 3 different types of BPM will be installed on the storage ring with inner diameter distributed between 16 and 24 mm. Electromagnetic and thermal simulations have been conducted to validate the designs.

Manufacturing the feedthroughs is a challenge due to the conical shape of the button and the small thickness (200 μm) of the gap with the BPM body. Prototypes of the button have been made by two different manufacturers and have been installed on a test vacuum chamber.

This talk presents the designs, the simulations and summarizes the results of the metrology of the two batches of feedthroughs and their installation on the vacuum chamber.

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