



Contribution ID: 233

Type: **Poster Presentation**

## **SOLEIL II Beam Position Monitors: design, simulations and button prototyping.**

*Tuesday, 10 September 2024 16:00 (1h 30m)*

SOLEIL II is the low emittance upgrade project for Synchrotron SOLEIL, targeting an emittance of  $\sim 80$  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 ( $200 \mu\text{m}$ ) thickness of the gap with the BPM body. Prototypes of the button have been made by two different manufacturers, and possibilities for improvement identified. These prototypes will test in the current machine to validate the simulation results.

This paper presents the designs, summarizes the results of the simulations, and describes the metrology process and results of the two batches of feedthroughs.

### **Footnotes**

### **Funding Agency**

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Yes

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**Session Classification:** TUP: Tuesday Poster Session

**Track Classification:** MC3: Beam Position Monitors