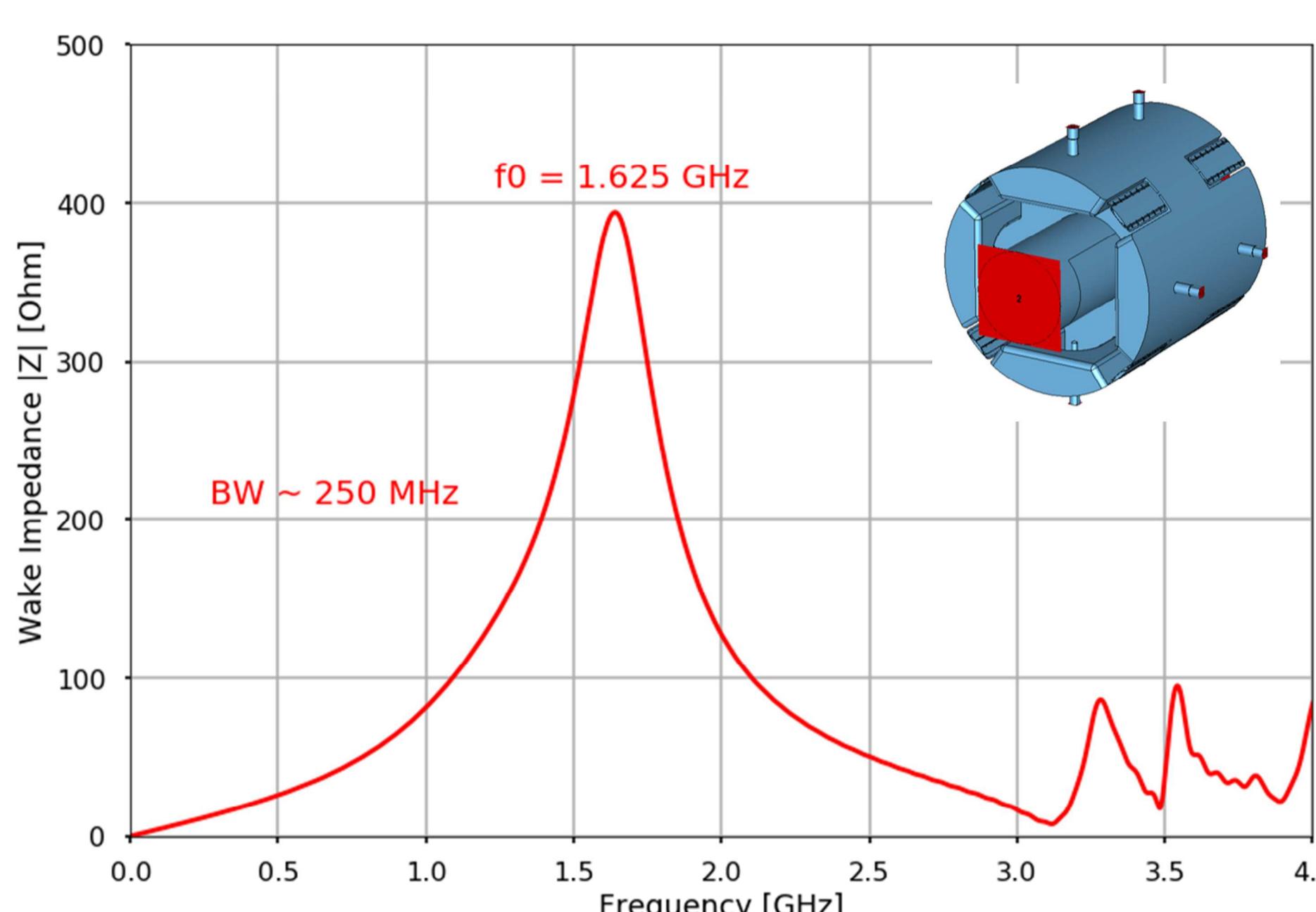
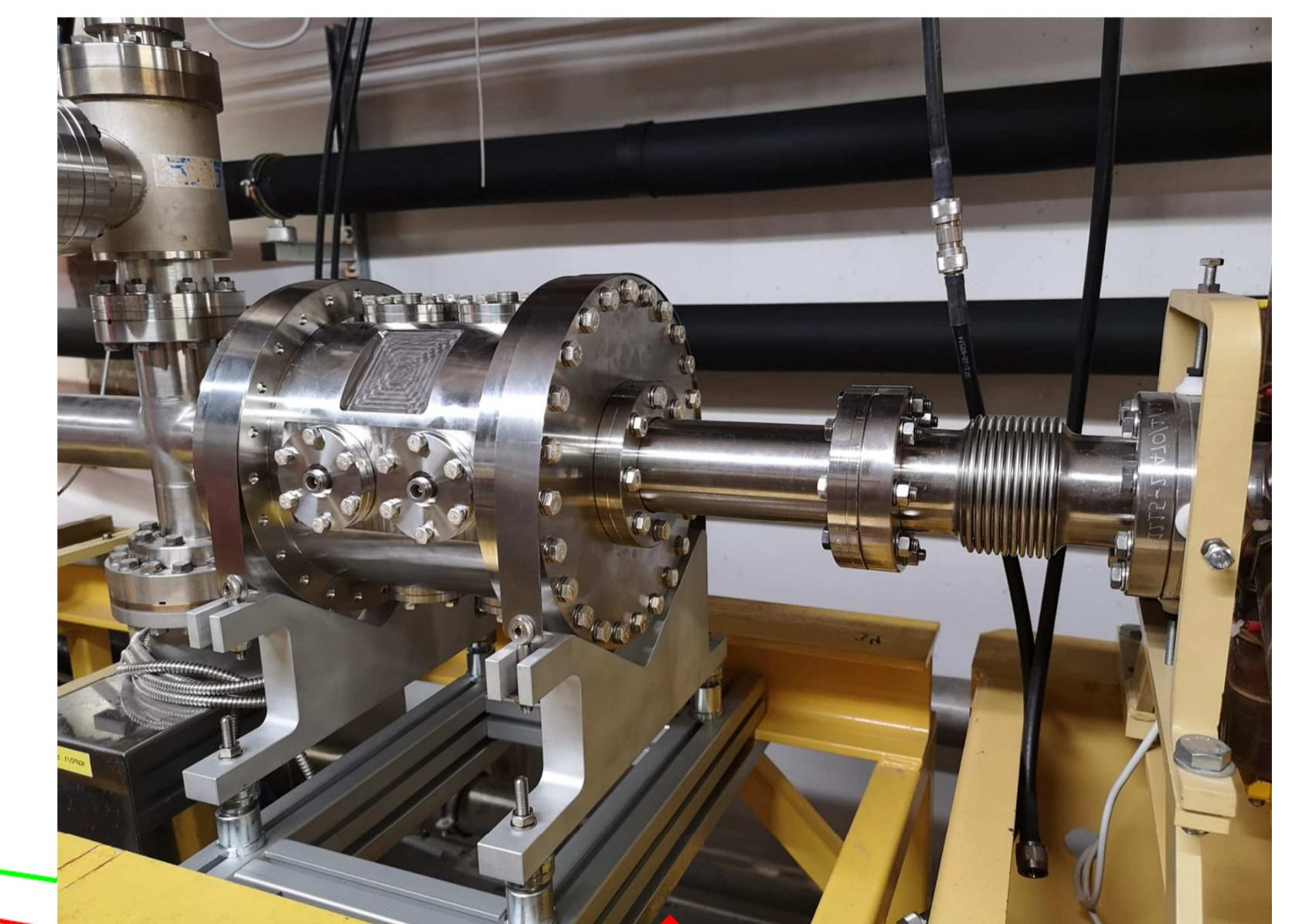


A LONGITUDINAL KICKER CAVITY FOR THE BESSY II BOOSTER

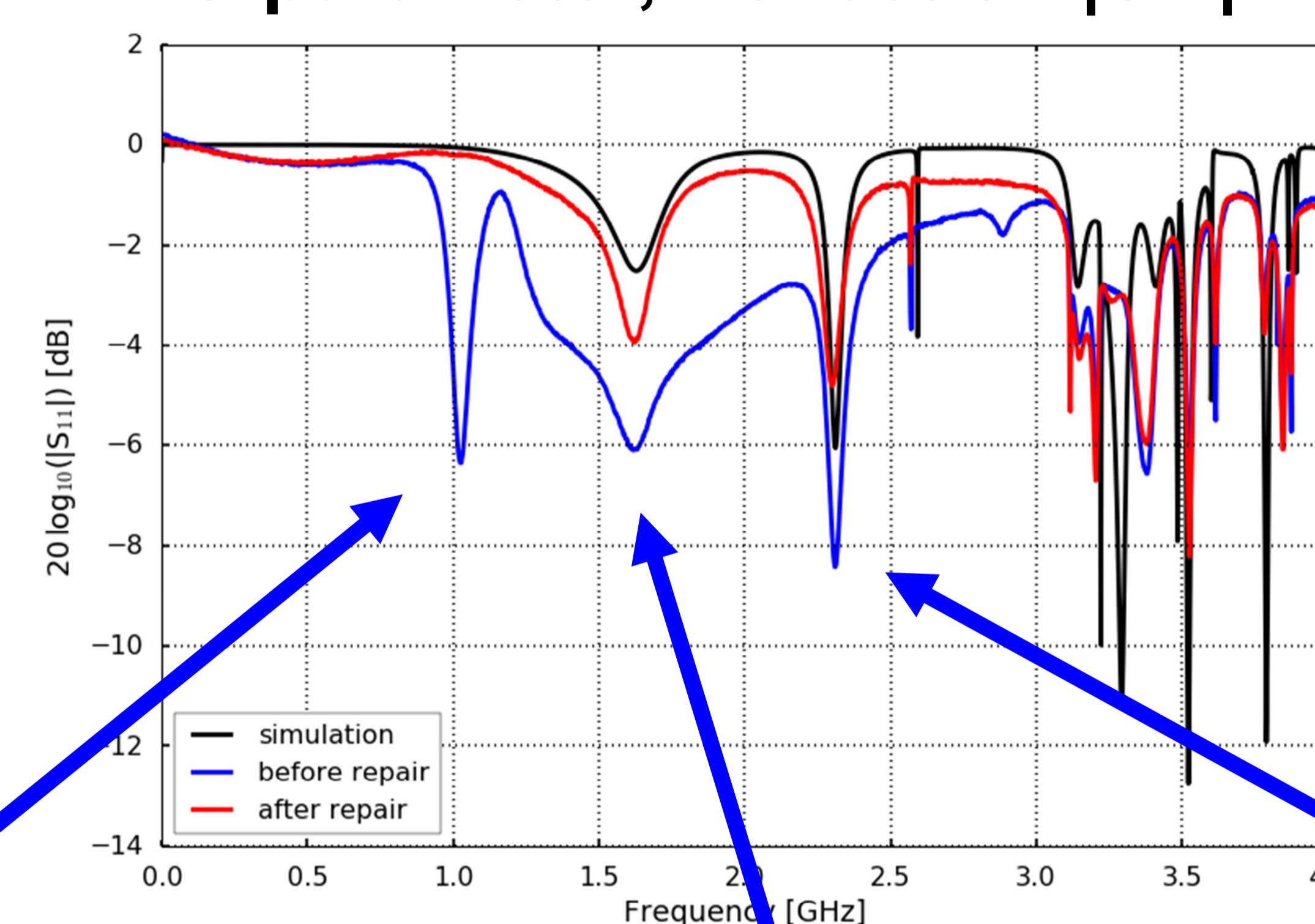
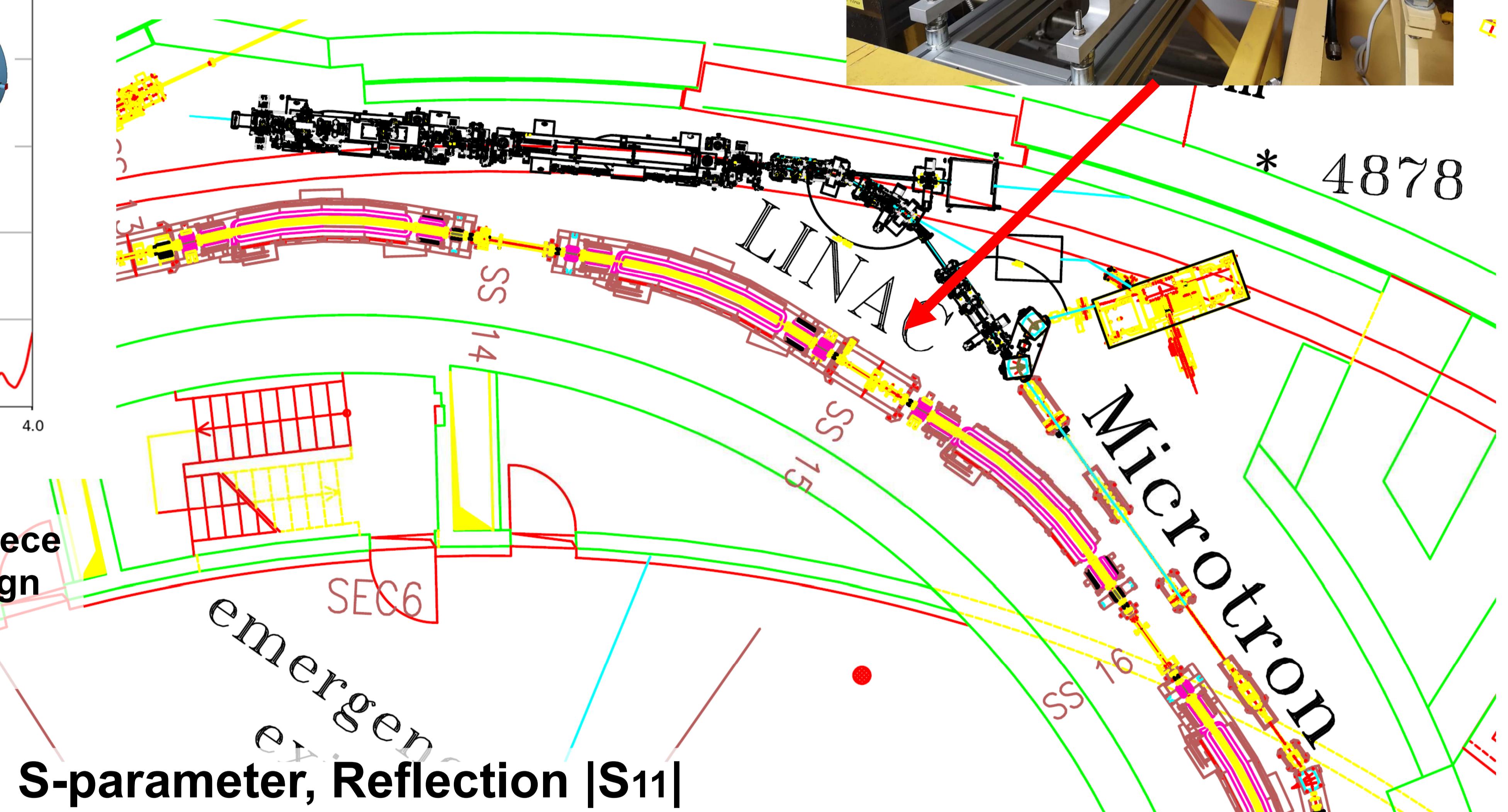
T. Atkinson, M. Dirsat, A. Matveenko, A. Schälicke, B. Schriefer, Y. Tamashevich (HZB) and T. Flisgen (FBH)

SITE ACCEPTANCE TESTS

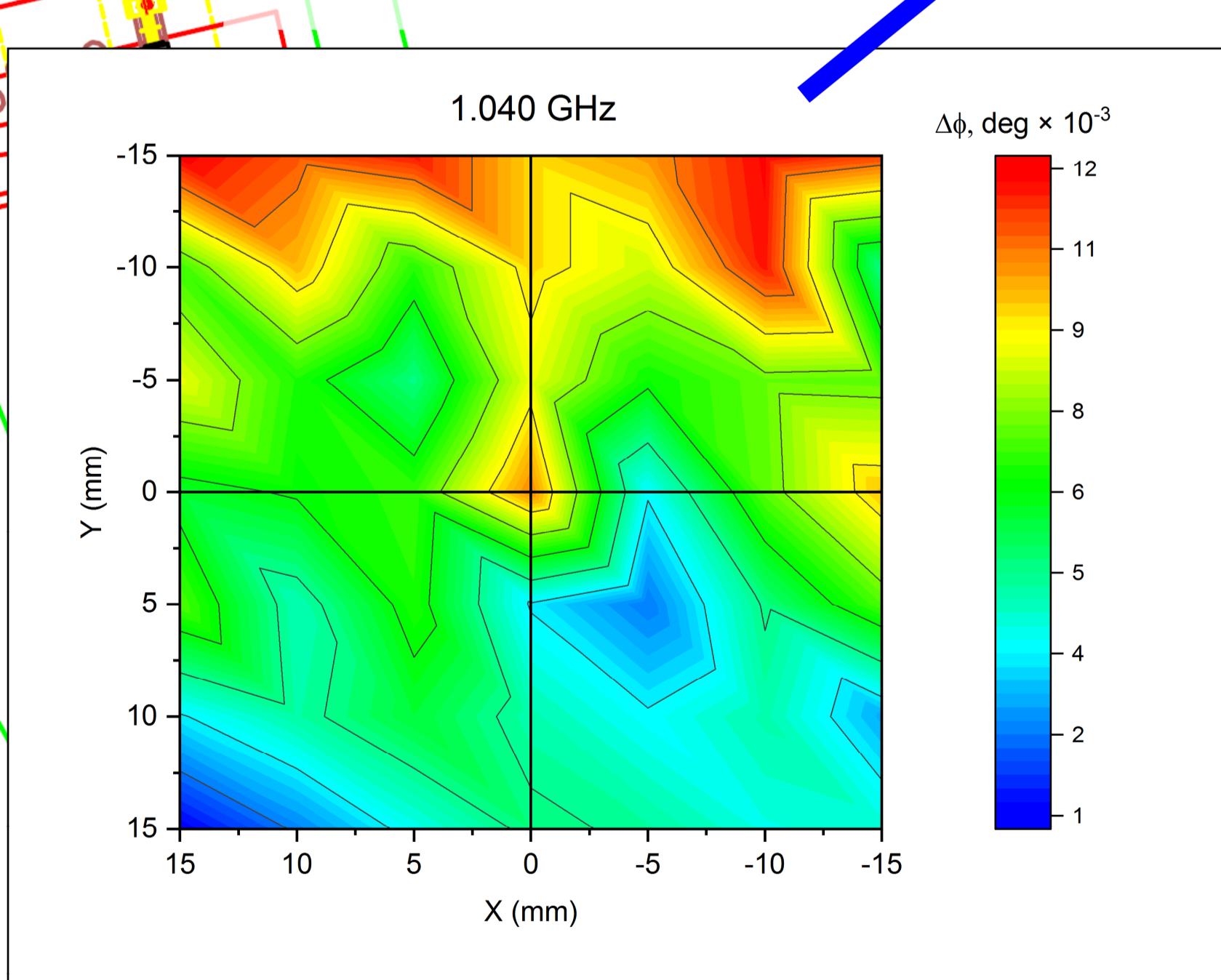
As part of the global refurbishment of the injector at BESSY II, a new longitudinal kicker cavity and suitable feedback will be installed in the booster. Both a flexible bunch charge and spacing is essential for efficient injection. Such a cavity is needed to mitigate the unwanted coupled bunch instabilities associated with these elaborate filling patterns and the HOMs of additional accelerating structures. This paper covers the conceptual design, simulation strategy, manufacture and bench tests of the longitudinal kicker cavity before it is installed in the ring.



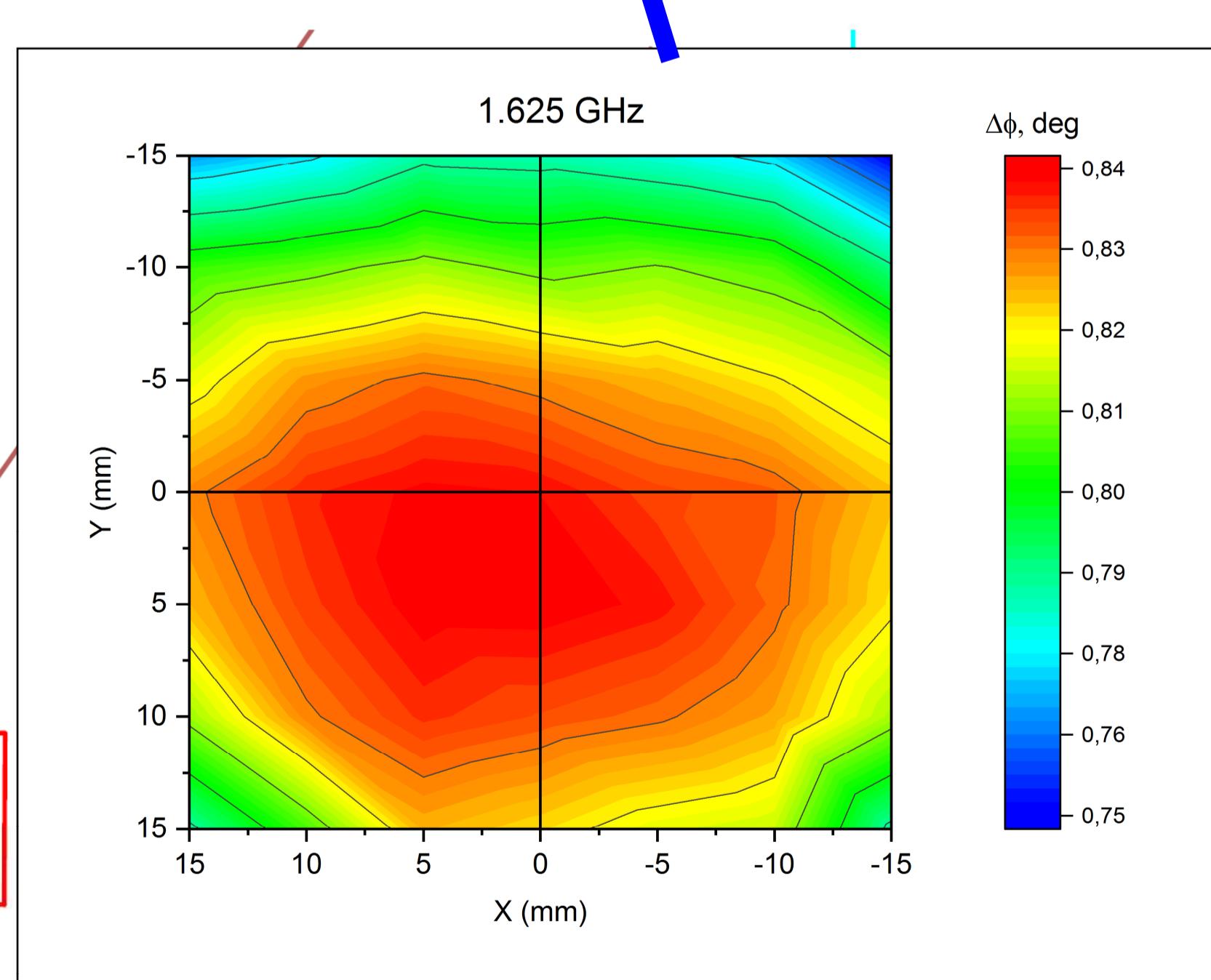
The vacuum model was optimised piece by piece using CST to meet the design specifications of the booster



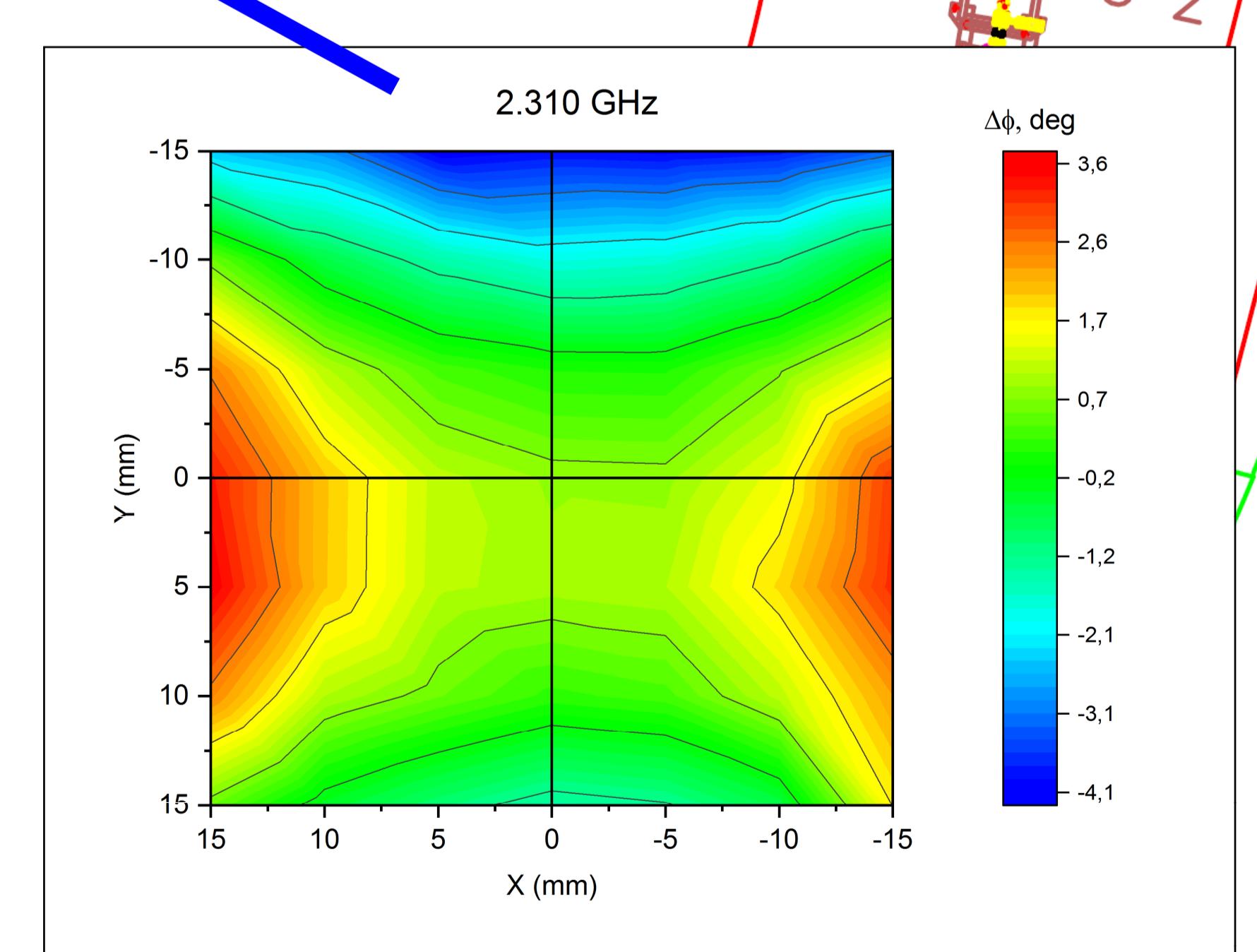
Bead pull measurements



By mapping the field profile the unwanted notch at 1 GHz was geometrically located in the upper region



Before the modifications, the fundamental mode appears to be slightly off center.



Dipole mode, present in both simulation and measurement. Mode has no substantial longitudinal Component.

$$V_{\max} = \sqrt{P_{\text{amp}}(1 - |S_{11}|^2)} \frac{f_0}{\Delta f} Z \approx 300 \text{ V}$$

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