



PRELIMINARY CALCULATION OF THE POWER COUPLER FOR THE SYLA STORAGE RING RF CAVITY

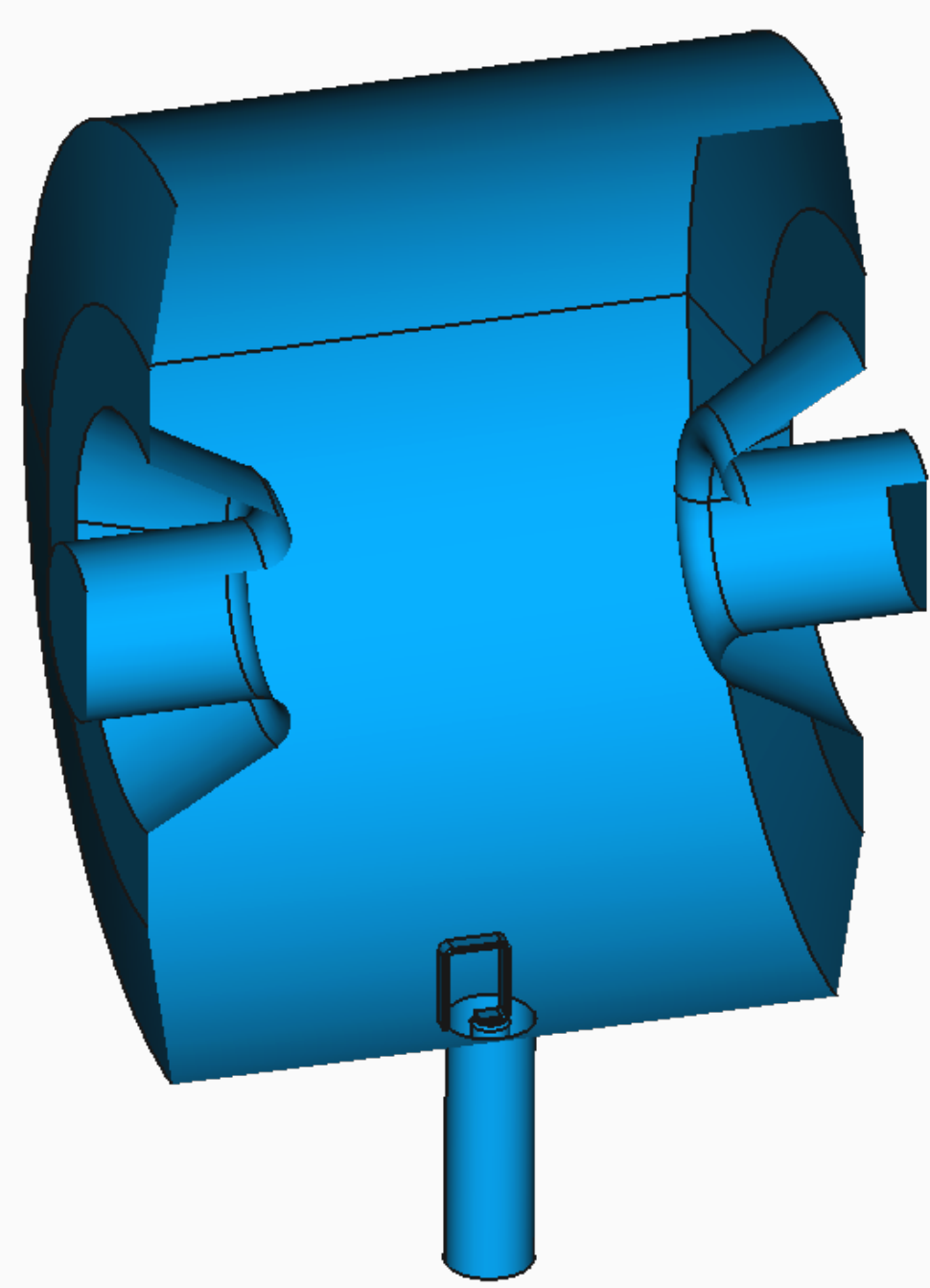
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Introduction

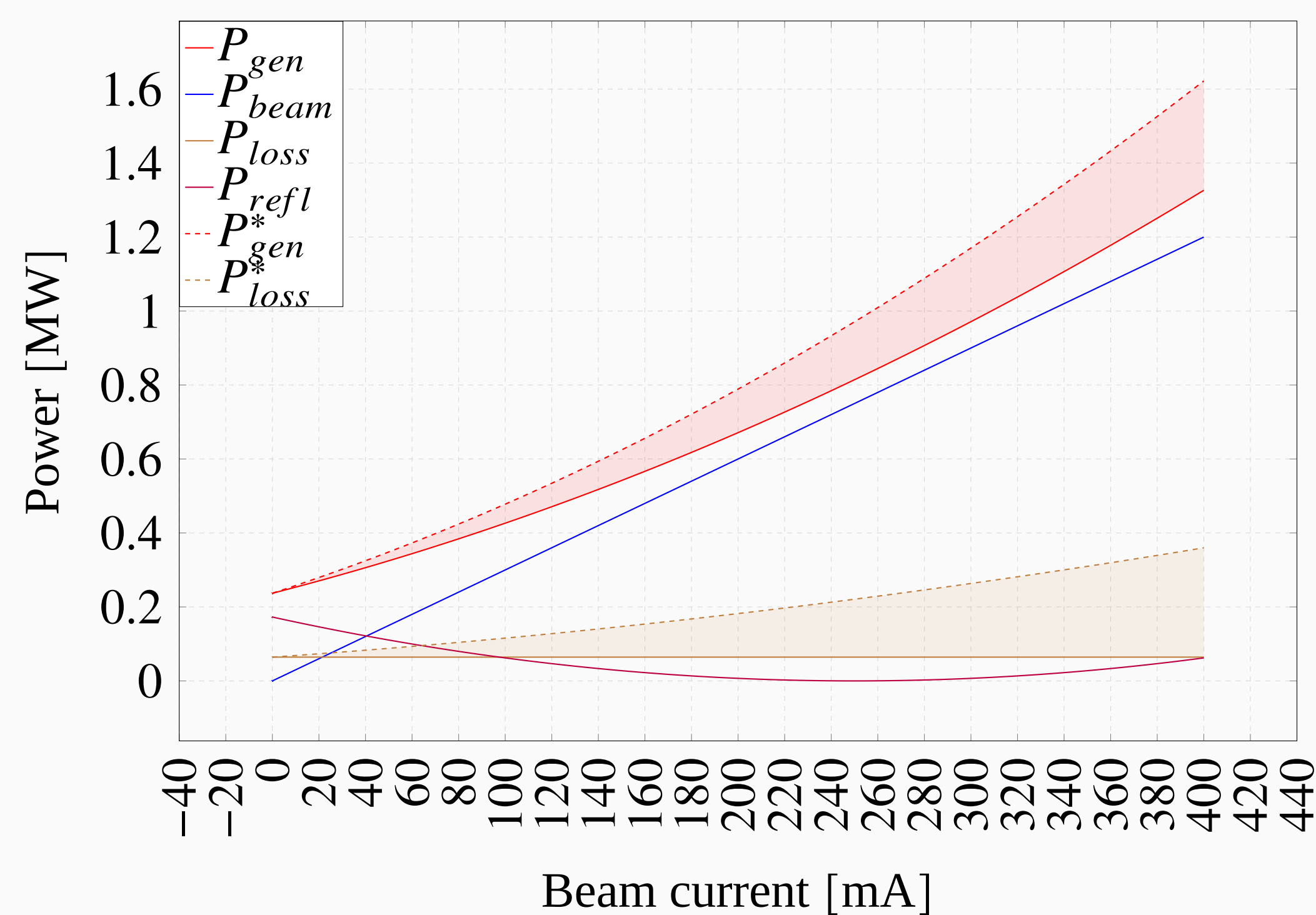
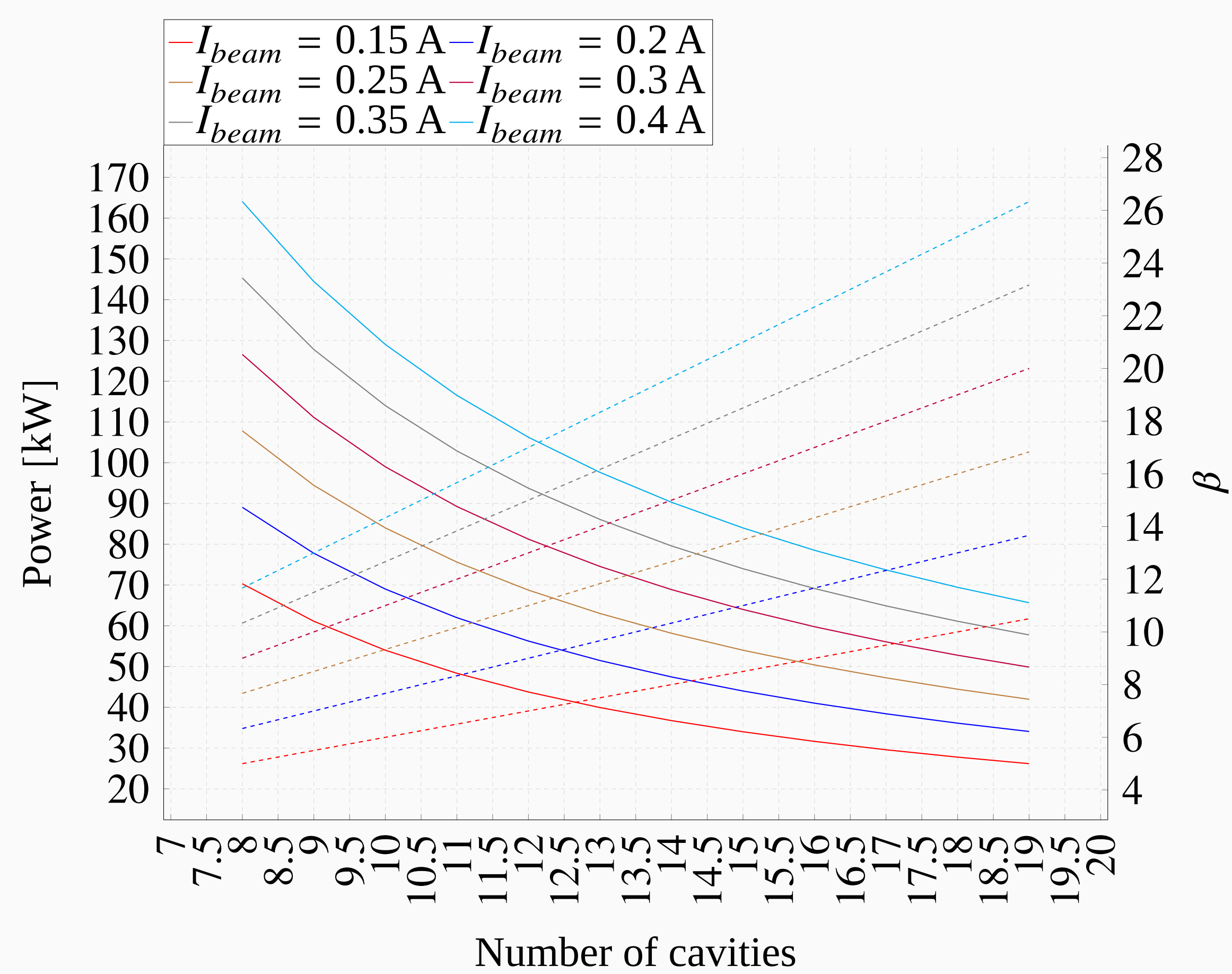
Several new accelerator facilities will be built in Russia in the next few years. One of those facilities is a 6 GeV storage ring light source, the Ultimate Source of Synchrotron Radiation to be built in Protvino, near Moscow.
This paper considers storage ring RF cavity power coupler design issues and provides a preliminary calculations of the device.

RF cavity

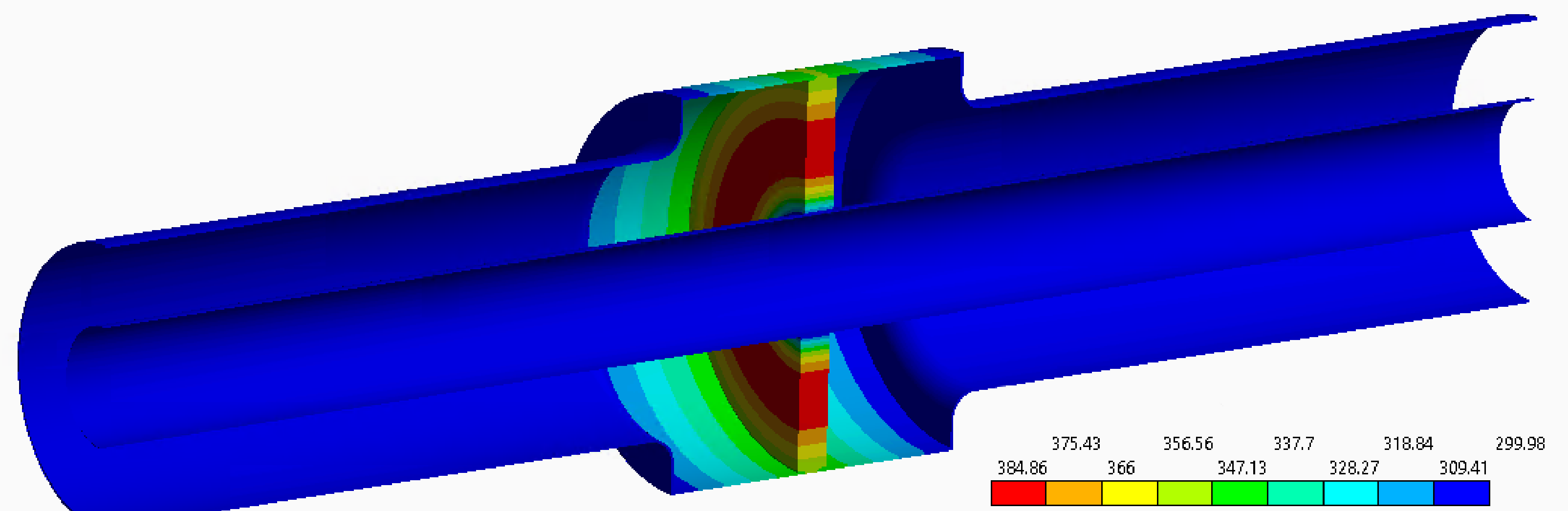


RF cavity with power coupler loop

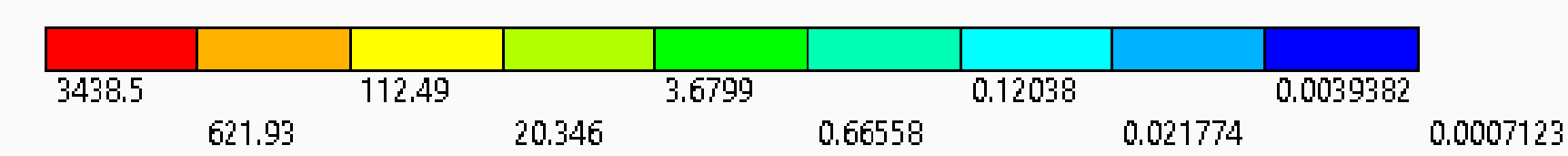
Power characteristics



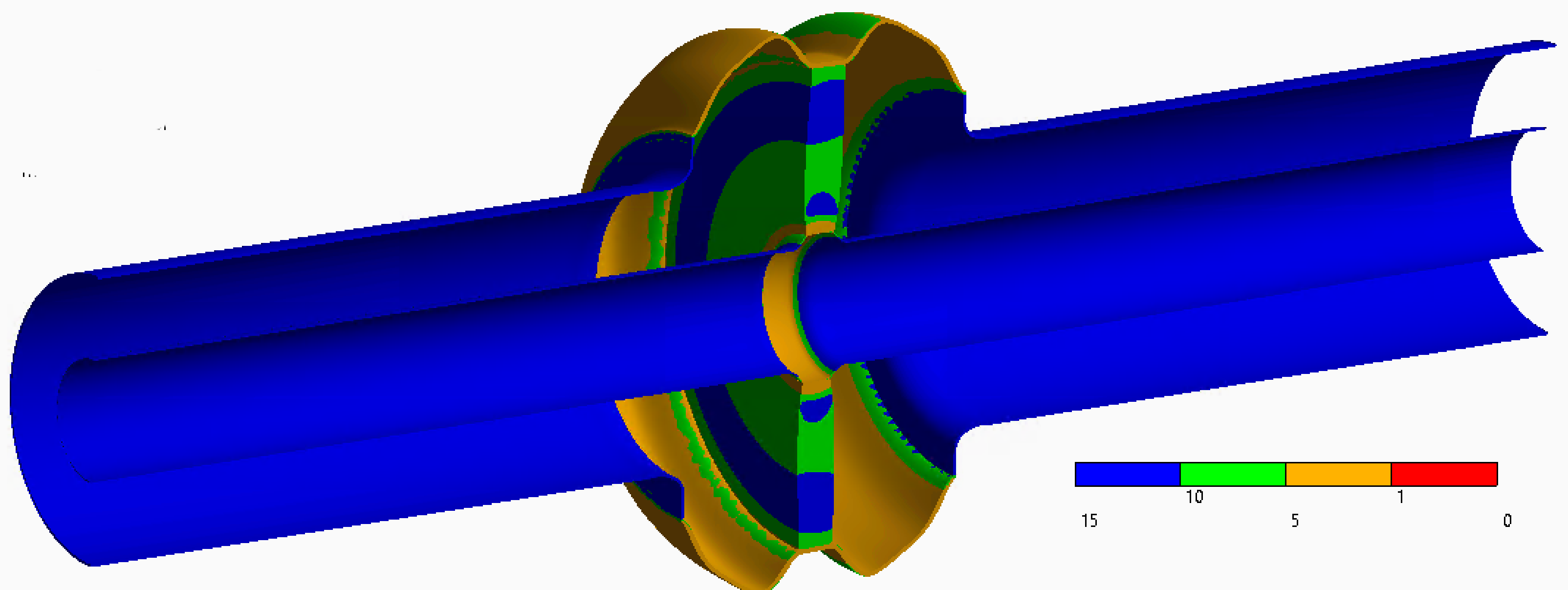
RF window



Temperature distribution



RF window stress



RF window safety factor

Conclusion

In this paper power coupler preliminary calculations were carried out. Number of RF cavities was chosen $N = 14$, CF50 vacuum flange was selected as an RF coupler interface. Simulation of the simplified RF window model was done. It showed an excessive temperature on the ceramics window, which lead to the unacceptably large mechanical stress in the copper to ceramics brazing region. Usage of the beryllium based ceramics is currently under consideration.