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Higher order modes characteristic of the capacitive type RF cavity at the Siam Photon Source

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The present storage ring of the Siam Photon Source is equipped with the new 118 MHz capacitive type RF cavity, adapted from MAX-IV laboratory. This cavity has been installed in the ring since 2016. The cavity is operated with the digital low level RF controller and the solid-state RF amplifier. The system is running fine with less downtime and maintenance. After the full four insertion devices were added in the ring, there are instabilities detected in the beam signals. Investigation on the cavity were carried out with the simulation and measurement to characterize the higher order modes that may causes beam instabilities, especially the longitudinal modes. Simulation of the higher order modes will be presented. The modes properties from the measurements with various temperatures will also be presented. The cavity has two ports on its body reserved for the higher order modes damping mechanism. This study will be served as the baseline of the modes for the future designing of the damping mechanism.

Footnotes

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LaTeX

Region represented

Asia

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