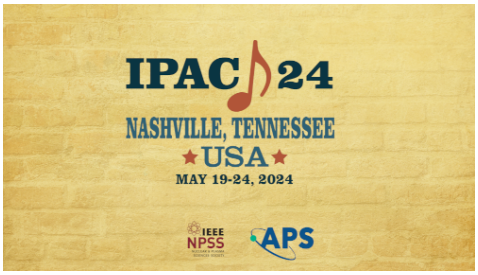

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AIRIX reconfiguration for the synchronization of the two EPURE LINACs and control of the high current functioning point by reducing the consequences of BBU instabilities

Wednesday, 22 May 2024 16:00 (2 hours)

In 2023, a significant reconfiguration has been undertaken on the first radiographic axis AIRIX to assure its synchronization with the second LINAC of EPURE facility. On AIRIX, the high current functioning point in progress since 2016 (2.6 kA / 19.2 MeV) has been maintained. A number of experimental tests has been performed to further understand the BBU beam instability phenomenon, mainly in the final acceleration and drift space of the machine. Some studies have been conducted to find the origin of this phenomenon and to improve our electronic performances. After calculating differing beam initial conditions at the cathode, variations of constraints on the electron beam have been applied to learn about the consequences of these transport strategies on the envelop beam stability. Finally, by keeping our historical transport global trend and by locally adjusting magnetic fields just downstream the injector module, we noted a significant decrease of instabilities from the middle of accelerator up to the X-ray conversion target. A more robust configuration seems to be reached. It will be tested again on AIRIX at the beginning of 2024 to confirm our works, and then on our second accelerator hoping to reduce time dedicated to EPURE LINACs preparation.

Footnotes

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