TueA04

Fine-Tuning to Minimize Emittances of J-PARC RF-Driven H^- Ion Source

Akira Ueno, Kiyonori Ohkoshi, Kiyoshi Ikegami, Akira Takagi, Hiroyuki Asano, and Hidetomo Oguri

J-PARC Center, Tokai-mura, Naka-gun, Ibaraki-ken 319-1195, Japan

Corresponding Author: Akira Ueno, e-mail address: akira.ueno@j-parc.jp

The Japan Proton Accelerator Research Complex (J-PARC) cesiated rf-driven H^- ion source (IS) [1-3], whose requirements are a peak beam intensity of 60mA within normalized emittances of 1.5πmm•mrad both horizontally and vertically, a flat top beam duty factor of 1.25% (500μs×25Hz) and a life-time of longer than 1month, has been successfully operated for about one year. The results of the fine-tuning to minimize the emittances of the J-PARC-IS with plasma chamber #3, which had the largest emittances with initial settings among four plasma chambers, will be presented in this paper. The rod-filter-filed will be finely tuned by selecting magnets with slightly different field strengths and/or changing gap-lengths. The dependence of the beam-hole-diameter on the emittances will be also presented. The tuning procedure to improve the emittances is one of the most important technology for the IS of the high-energy and high-intensity accelerator.

References

1. A. Ueno et. al., AIP Conference Proceedings 1655, 030008 (2015).
2. A. Ueno et. al., AIP Conference Proceedings 1655, 030009 (2015).
3. A. Ueno et. al., AIP Conference Proceedings 1655, 030010 (2015).