ABSTRACT

Operation of a cesiated RF-driven negative hydrogen ion source was initiated in September 2014 in response to the requirements of beam current upgrade in J-PARC linac. Delivery of the required beam current from the ion source to the J-PARC accelerators has been successfully performed. In 2016/2017 campaign, continuous operation of the ion source for 1,845 hours (RUN#75 from April to July 2017) was achieved with beam current, RF macro pulse width and repetition of 45 mA, 0.8 ms and 25 Hz, respectively. We present the operation status of the ion source and a high current H- beam with 70 mA extracted from the ion source for further high-power upgrade in J-PARC accelerators.

SUMMARY

The J-PARC cesiated RF-driven H- ion source is being operated since September 2014 without any serious issues. In the 2016/2017 campaign, the continuous operation of the ion source for the J-PARC linac approximately 1,840 hours was achieved. A high-intensity trial was executed in this campaign as the first step aiming for demonstration of the beam power of 1.5 MW-equivalent at the RCS in a few years. The beam current of 68 mA was extracted from the ion source and achieved. A high-intensity trial was executed in this campaign as the first step aimed for demonstration of the beam power of 1.5 MW-equivalent at the RCS in a few years. The beam current of 68 mA was extracted from the ion source and achieved. Further investigation is necessary to adopt the antenna to the ion source for J-PARC linac operation.

REFERENCES