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(a) Distribution of $H\alpha$ emission measured by a $H\alpha$ imaging spectrometer at the extraction region in the hydrogen negative ion source. (b) Difference image of $H\alpha$ emission ($\Delta H\alpha$) between that before and during beam extraction. The $\Delta H\alpha$ image shows the extraction structure of hydrogen negative ions caused by the reduction of excited hydrogen population which in turn due to the decreasing mutual neutralization process. (Katsunori IKEDA *et al.*, Plasma and Fusion Research Vol.8, 1301036 (2013) <http://www.jspf.or.jp/PFR/>)