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Blob birth and transport in NSTX: GPI data analysis and theory<sup>1</sup> J.R. MYRA, D.A. D'IPPOLITO, D.A. RUSSELL, Lodestar Research Corp., D.P. STOTLER, S.J. ZWEBEN, PPPL, R. MAQUEDA, Nova Photonics, J. BOEDO, UCSD, T. MUNSAT, U. Colorado, NSTX TEAM — Movies of blobs (i.e. convecting filamentary structures in the scrape-off-layer) taken with the gas-puff-imaging (GPI) diagnostic are used to extract blob parameters: birth zone, scale size, radial velocity  $v_x$  and (with DEGAS-2 modeling to infer plasma density and temperature from the He 5876 emission), density and temperature. These measured properties are compared with theory. It is shown that the birth zone and blob parameters are related to the local maximum of the edge  $\nabla ln \langle p \rangle$  suggesting blob generation by an underlying edge instability. The observed blobs are plotted on a theoretical regime diagram,<sup>2</sup> and mostly lie in the sheath-connected regime. The observed  $v_x$  are equal to, or exceed, a minimum velocity scaling predicted by theory. The excess depends on position and is qualitatively consistent with separatrix effects. However, some additional physics not in the present model also influences  $v_x$ .

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