On the limiting behaviour of some nonlocal seminorms: a new phenomenon

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Abstract. In this note we study the behaviour as $s \to 0^+$ of some semigroup based Besov seminorms associated with a non-symmetric and hypoelliptic diffusion with a drift. Our results generalise a previous one of Maz'ya and Shaposhnikova for the classical fractional Sobolev spaces $W^{s,p}$, and they also underscore a new phenomenon caused by the presence of the drift.