

1061-35-34

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We consider the initial value problem for the Benjamin-Ono equation (and its generalized form) in weighted Sobolev spaces  $Z_{s,b} = H^s(\mathbb{R}) \cap L^2(|x|^{2b}dx)$ ,  $s \geq 1$  and  $s \geq b \in [0, \infty)$ . We deduce necessary and sufficient conditions for the persistence property of the solution flow to hold in this spaces  $Z_{s,b}$ . These results extend previous ones due to R. I. Iorio. (Received March 09, 2010)