On the local regularity of Kadomtsev-Petviashvili-II equation

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Abstract

We prove the local well-posedness for the KP-II equation in the anisotropic Sobolev spaces $H^{s_1,s_2}_{x,y}(\mathbf{R}^2)$ for $s_1 > -1/3,\ s_2 \geq 0$. On the other hand we prove that the crucial bilinear estimate needed for the local well-posedness fails for $s_1 < -1/3$, $s_2 = 0$.

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