

The Initial-boundary value problem for the Kawahara equation on the half-line

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In this work we discuss the initial-boundary value problem (IBVP) of the Kawahara equation posed on the right and left half-lines. We prove the local well-posedness in the low regularity Sobolev space. We introduce the Duhamel boundary forcing operator, which is introduced by Colliander - Kenig [1] in the context of Airy group operators, to construct solutions on the whole line. We also give the bilinear estimate in $X^{s,b}$ space for $b < \frac{1}{2}$, which is almost sharp compared to IVP of Kawahara equation [3, 2] (excluding only the endpoint regularity $s = -\frac{7}{4}$).

References

- [1] J. COLLIANDER AND C. KENIG, *The generalized Korteweg-de Vries equation on the half line*, Comm. Partial Differential Equations, Vol.27 (2002), 2187-2266.
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