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**Seungly Oh\*** ([ohseun@missouri.edu](mailto:ohseun@missouri.edu)), Room 217, Mathematical Sciences Building, University of Missouri - Columbia, Columbia, MO 65211. *Non-linear effect in the periodic KdV equation with rough initial data.*

We observe a smoothing effect of global-in-time solutions of the periodic Korteweg-de Vries equation in low regularity settings  $H^{-1/2+}$ . This smoothing effect is given by subtracting off a non-linear resonant solution, rather than the linear solution. The main method involved is the normal form transform. The result indicates a strong non-linear effect arising in the solution dynamics when the initial data contains rapid oscillations. (Received September 16, 2013)