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Ivonne Rivas* (rivasie@mail.uc.edu), Department of Mathematical Sciences, University of Cincinnati, Cincinnati, OH 45221, and Bingyu Zhang (zhangb@ucmail.uc.edu), Department of Mathematical Sciences, University of Cincinnati, Cincinnati, OH 45221. On a class of initial-boundary-value problems of the Kortweg-de Vries equation posed on finite domain.

In this talk, we are going to consider the Kortweg-de Vries equation posed on the finite domain (0, L),

$$u_t + u_x + uu_x + u_{xxx} = 0, \quad t > 0, \ x \in (0, L)$$

with the initial condition

$$u(x,0) = \phi(x), \quad x \in (0,L)$$

and the boundary conditions

$$u(0,t) = h_1(t), \quad u_x(L,t) = h_2(t), \quad u_{xx}(L,t) = h_3(t).$$

This initial-boundary-value problem (IBVP) has been studied by Colin and Ghidaglia (An initial-boundary-value problem for the Korteweg-de Vries Equation posed on a finite interval, Adv. Differential Equations 6 (2001), 1463-1492). They showed that the IBVP is locally well-posed in the space $H^1(0, L)$ with the initial data drawn from $H^1(0, L)$ and the boundary data h_1 , h_2 , h_3 taken from the product space $C^1(0,T) \times C^1(0,T) \times C^1(0,T)$. In this talk, we will show that the IBVP is locally well-posed in the space $H^s(0, L)$ for any s > -1 with ϕ drawn from the space $H^s(0, L)$ and the boundary data taken from the space $H^{\frac{s+1}{3}}(0,T) \times H^{\frac{s-1}{3}}(0,T)$. (Received January 25, 2010)