1061-35-20 **Elena Kaikina*** (ekaikina@matmor.unam.mx), Instituto de Matematicas, UNAM Campus Morelia, AP 61-3 (Xangari), 58089 Morelia, Michoacan, Mexico, and **Martin Arciga Alejandre** (mparciga@matmor.unam.mx), Instituto de Fisica y Matematicas, UMSNH, Edificio C-3, Ciudad Universitaria, Morelia, Michoacan 58089. *Absolute value of a fractional derivative on a half-line.*

Consider the initial-boundary value problem on a half-line for the nonlinear evolution equations with a fractional derivative

$$\begin{cases} u_t + \lambda |u|^\sigma u + |\partial_x|^\alpha u = 0, \ t > 0, x > 0, \\ u(x,0) = u_0(x), \ x > 0, \end{cases}$$

where the $|\partial_x|^\alpha$ operator on a half-line is defined as follows for $\alpha \in (1,2)$

$$|\partial_x|^\alpha u = \theta(x) \int_{-i\infty}^{i\infty} e^{px} |p|^\alpha \left( \widehat{u}(p,t) - \frac{u(0,t)}{p} \right) dp.$$

Here the function $\theta$ is defined as

$$\theta(x) = \begin{cases} 1, x \geq 0 \\ 0, x < 0. \end{cases}$$

We study traditionally important problems of a theory of nonlinear partial differential equations, such as global in time existence of solutions to the initial-boundary value problem and the asymptotic behavior of solutions for large time. (Received January 25, 2010)