1020-35-133   **Jerry L Bona** (`bona@math.uic.edu`), Dept. of Math, Statistics and Computer Sci., University of Illinois at Chicago, Chicago, IL, **Hongqiu Chen*** (`hchen1@memphis.edu`), Department of Mathematical Sciences, University of Memphis, Memphis, TN, **Shuming Sun** (`sun@math.vt.edu`), Department of Mathematics, Virginia Polytechnic Institute and State, Blacksburg, VA , and **Bingyu Zhang** (`bzhang@math.uc.edu`), Department of Mathematical Sciences, University of Cincinnati, Cincinnati, OH. *Using finite intervals to approximate infinite intervals: the BBM-equation.*

The focus of my talk is the standard BBM equation

$$\eta_t + \eta_x + \eta\eta_x - \eta_{xxt} = 0 \tag{1}$$

which models unidirectional propagation of small amplitude long waves in dispersive media. The first interest is the two-point boundary value problem wherein the wave motion is specified at both ends of a finite stretch of the media. The principal result is an exact theory of convergence of the two-point boundary value problem to the quarter-plane boundary value problem in which a semi-infinite stretch of the medium is disturbed at its finite end. The second issue is the relationship between two different types of solutions, namely, the solutions in Sobolev spaces defined on $\mathbb{R}$ and periodic solutions of period $2l$. The main result is that the limit of periodic solutions as $l \to \infty$ is equal to the solutions in Sobolev spaces. (Received August 23, 2006)