Meeting: 1002, Pittsburgh, Pennsylvania, SS 4A, Special Session on Partial Differential Equations and Applications

1002-35-106 **Alberto Bressan*** (bressan@math.psu.edu), 218 McAllister Building, Penn State University, University Park, PA 16802. *Global solutions to the Camassa-Holm equations.* Preliminary report.

The Camassa-Holm equation can be written as a scalar conservation law with an integro-differential source term. Although the H^1 norm of a solution remains uniformly bounded, it is known that the Lipschitz constant can blow up in finite time. When this happens, solutions can be prolonged in time in two different ways: with the total energy $\int (u^2 + u_x^2)dx$ being either conserved, or dissipated. These two cases give rise to two distinct evolution semigroups, with trajectories depending continuously on time and on the initial data. Global solutions can be obtained as fixed points of a contractive transformation, in a new set of independent and dependent variables. More accurate estimates on continuous dependence can be obtained using a distance functional defined in terms of an optimal transportation problem. (Received September 08, 2004)