1046-53-1315     **Michael S Gagliardo\*** (`mgaglia@ju.edu`), Division of Math and Science, Jacksonville University, 2800 University BLVD N, Jacksonville, FL 32211. *The Higher Flows of Harmonic Maps.*

In the subject of integrable systems, there is a hierarchy of flows called the AKNS hierarchy (Ablowitz, Kaup, Newell and Segur). This hierarchy includes both the modified KdV equation and the nonlinear Schrödinger equation as well as others. The equations in the AKNS hierarchy are sometimes called the positive flows since each equation can be assigned a positive integer based on the element that generates the flow. The harmonic map equation can be seen as a -1 flow of the AKNS hierarchy and there is a hierarchy of negative flows associated with the harmonic map equation. The AKNS hierarchy can by realized in a loop group setting and the flows can be seen as resulting from a group action. By using a loop group setting, we can see that the two hierarchies are actually part of one large hierarchy and all of the flows commute. (Received September 15, 2008)