1132-35-324 **Mark Ablowitz** (mark.ablowitz@colorado.edu), Boulder, CO 80309, **Gino Biondini** (biondini@buffalo.edu), Buffalo, NY 14260, and **Qiao Wang*** (qiaowang@buffalo.edu), Buffalo, NY 14260. *Whitham modulation theory for (2+1)-dimensional evolution equations.*

The generalization of Whitham modulation theory to (2+1)-dimensional systems has been a long-standing open problem in nonlinear waves. This talk will discuss recent progress in this direction. In particular I will discuss how, a suitable multiple-scales expansion allows one to derive Whitham modulation systems for various physically relevant multi-dimensional systems such as the Kadomtsev-Petviashvili (KP) equation, the two-dimensional Benjamin-Ono (2DBO) equation and the modified Kadomtsev-Petviashvili equation. I will also discuss the basic properties of these systems and use these system to study the transverse stability of the periodic solution of the KP and 2DBO equations, as well as the formation of dispersive shock waves in 2 spatial dimensions. (Received July 25, 2017)