**GEORGE PAPAMIKOS**, University of Reading

*On Darboux transformations of the vector sine-Gordon equation and related structures*

We present the vector sine-Gordon equation (vSG) together with its Lax representation and its reduction group. We are interested in Darboux transformations invariant under the same reduction group and the corresponding Backlund/symmetry transformations of the vSG. We use the Darboux transformation to construct a related vector Yang-Baxter map, an integrable partial difference equation and a vector differential-difference equation on the sphere. We will briefly discuss the dressing method and the construction of soliton solutions for the vSG.

This is a joint work with Prof J.P. Wang (Kent) and Prof A.V. Mikhailov (Leeds)