1 Objectives of the proposal

Recently Prof Dubrovin et al introduced the so called extended Toda lattice hierarchy which encodes the recursion relations of CP^1 Gromov–Witten invariants. There has been also an study of its Virasoro symmetries which shows a connection with a particular tau function of the extended Toda lattice hierarchy.

We propose to study possible extensions of the 2D Toda hierarchy and explore its connections with extended invariants. Moreover, try to apply these ideas to the multi-component Toda hierarchy.

- Boris Dubrovin, Guido Carlet and Youjin Zhang, The Extended Toda Hierarchy, nlin.SI/0306060, Moscow Math. J. 4 (2004) 313-332.

- Boris Dubrovin and Youjin Zhang. Virasoro Symmetries of the Extended Toda Hierarchy, math.DG/030815 Comm. Math. Phys. 250 (2004) 161-193.