ANTON DZHAMAY, University of Northern Colorado
Discrete Hamiltonian Structure of Schlesinger Transformations

Schlesinger transformations are algebraic transformations of a Fuchsian system that preserve its monodromy representation and act on the characteristic indices of the system by integral shifts. One of the main reasons for studying these transformations is the relationship between Schlesinger transformations and discrete Painlevé equations; this is also the main motivation behind our work. In this talk we show how to write an elementary Schlesinger transformation as a discrete Hamiltonian system w.r.t. the standard symplectic structure on the space of Fuchsian systems. We also show how such transformations reduce to discrete Painlevé equations by computing two explicit examples, d-$P\big(D_4^{(1)}\big)$ (or difference Painlevé V) and d-$P\big(A_2^{(1)*}\big)$. In considering these examples we also illustrate the role played by the geometric approach to Painlevé equations not only in determining the type of the equation, but also in studying the relationship between different explicit forms of equations of the same type.

This is a joint work with Tomoyuki Takenawa (Tokyo University of Marine Science and Technology) and Hidetaka Sakai (The University of Tokyo).