

Opers and integrability

I will introduce (q -)opers on a projective line in the presence of twists and singularities and will discuss the space of such opers. We will see how Bethe Ansatz equations for quantum spin chains and energy level equations of classical soluble models of Calogero-Ruijsenaars type naturally appear from the oper construction. Both can also be described in terms of so-called QQ -systems, which have their origins in algebra and representation theory. Our construction is universal and works for any simple, simply-connected complex Lie group G .