1023-35-1013 **Iordan P Michev*** (michevi@sunysuffolk.edu), Mathematics Department, 533 College Rd, Selden, NY 11784. *On Fay Identity.*

The talk is based on my recent paper "On Fay Identity" [J.Math.Phys., 47 (2006)]. The first part is about how to translate the Fay identity and the cubic identity (generally identities of degree $2^n - 1$) for KdV tau-functions from [Michev, J.Math.Phys. 40, 2419-2428 (1999)] to the specific case of trigonometric functions. In the second part of the talk we consider the Fay identity as a functional equation. We provide a large set of solutions and discuss the open problem for the translation to the specific case of elliptic theta functions. Another open problem is the geometric interpretation of the cubic identity (and the higher order identities) for elliptic theta functions. (Received September 24, 2006)