

1135-11-1961

**Sharon Frechette\*** (sfrechet@holycross.edu), **Holly Swisher**  
(swisherh@math.oregonstate.edu) and **Fang-Ting Tu** (tu@math.lsu.edu). *Appell-Lauricella  
Hypergeometric Functions over Finite Fields*. Preliminary report.

We define a finite-field version of Appell-Lauricella hypergeometric functions built from period functions in several variables, paralleling the development by Fuselier, et. al in the single variable case. We develop geometric connections between these functions and the family of generalized Picard curves, establishing a finite-field analogue of Koike and Shiga's cubic transformation for the Appell hypergeometric function  $F_1$ , proving a conjecture of Ling Long. We also count the number of  $\mathbf{FF}_p$ -points on the generalized Picard curves, and give several transformation and reduction formulas satisfied by these hypergeometric functions in several variables. (Received September 25, 2017)