

**Meeting:** 1001, Evanston, Illinois, SS 22A, Special Session on Special Functions, Orthogonal Polynomials, and their Applications

1001-33-163      **Hasan Coskun\*** ([hasan\\_coskun@tamu-commerce.edu](mailto:hasan_coskun@tamu-commerce.edu)), Department of Mathematics, Texas A&M-Commerce, Binnion Hall Room 314, Commerce, TX 75429. *On Generalizations of Certain Well-Known  $q$ -series Identities Associated to Root Systems.*

The definitions and the properties of the elliptic very well-poised multivariable Macdonald functions  $W_{\lambda/\mu}$  and the elliptic Jackson coefficients  $\omega_{\lambda/\mu}$  will be presented. A  $BC_n$  elliptic multivariable Jackson sum and a  $BC_n$  elliptic  ${}_{10}\phi_9$  transformation in terms of  $\omega_{\lambda/\mu}$  will be obtained.  $BC_n$  extensions of the one and two parameter Bailey Lemmas will be given and consequently generalizations of certain important  $q$ -series identities associated to root systems  $B_n$ ,  $C_n$  and  $D_n$  will be proved. These identities include Euler's Pentagonal Number Theorem, the unspecialized Rogers-Selberg identity, the Rogers-Ramanujan identities and the extreme cases of the Andrews-Gordon identities. (Received August 24, 2004)