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Dylan Charles Rupel* (drupel@uoregon.edu), Department of Mathematics, University of Oregon, Eugene, OR 97403. *Quantum Caldero-Chapoton Type Cluster Characters.*

Let (Q, \mathbf{d}) be an acyclic valued quiver with n vertices and let Λ be a compatible skew-symmetric $n \times n$ matrix. We will consider the skew-symmetrizable quantum cluster algebra $\mathcal{A}_q(Q, \Lambda) \subset \mathcal{T}_{\Lambda, q}$ inside the n -dimensional quantum torus associated to Λ . In our first work, "On a Quantum Analogue of the Caldero-Chapoton Formula," we propose a quantum Caldero-Chapoton type cluster character for skew-symmetrizable quantum cluster algebras, assigning to each valued representation of Q an element of the quantum torus $\mathcal{T}_{\Lambda, q}$. Our main conjecture states that exceptional objects are actually sent to cluster variables inside $\mathcal{A}_q(Q, \Lambda)$. We show that the mutation of the initial cluster in a sink or source direction exactly gives the action of the corresponding Dlab-Ringel reflection functor on valued representations, thus establishing the conjecture for those representations which can be obtained in this way. Later Qin established the conjecture for quivers where the valuations on the vertices are all equal. In this talk we will discuss the history of this problem and settle this conjecture using the Ringel-Hall algebra approach of Hubery. (Received September 22, 2011)