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Eric J Landquist* (elandqui@kutztown.edu), Kutztown University, Department of Mathematics, Kutztown, PA 19530, and **Felix Fontein** and **Renate Scheidler**. *Class Number and Regulator Computation in Purely Cubic Function Fields of Unit Rank Two.*

This talk will describe and give computational results of a general procedure to compute the divisor class number and regulator of purely cubic function fields of unit rank 2. Our implementation is an improvement to Pollard's Kangaroo method in infrastructures, using distribution results of class numbers, as well as information on the congruence class of the divisor class number, and an adaptation that efficiently navigates these torus-shaped infrastructures. Moreover, this is the first time that an efficient "square-root" algorithm has been applied to the infrastructure of a global field of unit rank 2. With the exception of function fields defined by curves which are equivalent to purely cubic nonsingular curves, our examples are the largest known divisor class numbers and regulators ever computed for function fields of genera 4 through 7. (Received September 22, 2010)