Meeting: 1006, Lubbock, Texas, SS 2A, Special Session on Differential Geometry and Its Applications

1006-51-186 **Lance D. Drager*** (drager@math.ttu.edu), Department of Math and Stat., Texas Tech University, Box 41042, Lubbock, TX 79409, **Jeffery M. Lee** (j-lee@math.ttu.edu), Department of Math and Stat., Texas Tech University, Box 41042, Lubbock, 79409, and **Clyde F. Martin** (martin@math.ttu.edu), Department of Math and Stat., Texas Tech University, Box 41042, Lubbock, 79409. *The Geometry of the Smallest Circle Enclosing a Finite Set of Points.*

A number of numerical codes have been written to find the circle of smallest radius enclosing a finite set P of points in the Euclidean plane, but these do not give much insight into the geometry of this circle. We investigate geometric properties of the minimal circle that may be useful in the theoretical analysis of applications. We show that a circle C enclosing P is minimal if and only if it is rigid in the sense that it cannot be translated while still containing P. We use this rigidity result and an analysis of the case of three points to find sharp upper and lower bounds on the diameter of the minimal circle in terms of the diameter of P. (Received February 14, 2005)