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Marta Cavaleiro and **Farid Alizadeh*** (farid.alizadeh@rutgers.edu), 100 Rockafellar Rd, room 5142, Piscataway, NJ 08854. *A Branch and bound algorithm for k -Min-Ball problem.*

The k -min-ball problem asks for finding the smallest ball containing at least k of n given points in general d -dimensional Euclidean space. This problem is NP-hard. The minimum ball problem (requiring the ball contain *all* points) is expressible as a second order cone program (SOCP). However, it turns out that for this special problem there are both primal and dual iterative algorithms that are very similar to the simplex method for linear programming. We incorporate these methods into a branch and bound search to solve the k -min-ball problem. Both the algorithm and computational results, as well as applications in classification theory will be presented. (Received September 16, 2014)