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**Arash Enayati Khorzoghi\*** (aenayati@qatar.cmu.edu), P.O. Box 24866, Doha, Qatar. *Nash equilibria in a one-dimensional dispersion game.*

We study a one-dimensional, multi-player game in which player  $i$  plays the game by choosing an integer  $a_i$  and judges the results by a utility function  $u_i(a_i) = -|a_i - \bar{a}| - 1.5 \cdot \sum_{j \neq i} \delta(a_i, a_j)$ , where  $\bar{a}$  is the arithmetic mean of all players' choices and  $\delta$  is a delta function. This utility function measures how fashionable player  $i$ 's choice is (proximity to the mean) and how unique s/he is in making their choice. We prove that this game always has at least one Nash equilibrium when number of players is greater than zero, and derive necessary and sufficient conditions for an outcome to be a Nash equilibrium. Moreover, we describe an algorithm with complexity  $O(n^2)$  to generate a Nash equilibrium outcome for any number ( $n > 0$ ) of players. (Received September 22, 2010)