1049-91-57   **Christopher Thomas Ryan*** (`chris.ryan@sauder.ubc.ca`), 2053 Main Mall, Vancouver, BC V6T 1Z2, Canada, and **Matthias Koeppe**, **Albert Xin Jiang**, **Kevin Leyton-Brown** and **Maurice Queyranne**. *Computing pure Nash equilibria in games with piecewise linear utilities.*

We explore the computational complexity of computing pure Nash equilibria and related concepts for two classes of games. The first is a new class of strategic games called integer programming games, where players' action sets are integer points inside of polytopes. The other is a class of symmetric games with fixed-size action sets. In both setting we consider piecewise linear utilities. Using recent results from the algorithmic study of short rational generating functions for encoding sets of integer points, we present efficient algorithms (taking some parameters to be fixed) for deciding the existence of pure Nash equilibria in these games, and as well as other related computations. (Received February 17, 2009)