ERRATA

1. Flaw in Concurrent Reachability Games: Complexity and Existence

The present proof regarding the complexity of concurrent constant-sum-reach-a-set games (Theorem 3 of the paper) has a flaw. The flaw in the proof is as follows: the polynomial approximability result uses Lipschitz continuity of values of concurrent discounted games, and the constant depends on the discounting factor. The present proof ignored the dependence of the discounting factor, and is not correct.

Consequences of the flaw. The consequences of the flaw in the proof are as follows.

- The claim about NP and coNP to approximate the values of concurrent reachability games of the paper, that depends on the previous proof, also suffers from the flaw. The best bound on the complexity of concurrent reachability games is PSPACE (given in the paper "Recursive Concurrent Stochatic Games" by Kousha Etessami and Mihalis Yannakakis that appeared in ICALP'06).

- The claim about NP and coNP to approximate the values of concurrent parity games that appeared in the paper "The Complexity of Quantitative Concurrent Parity Games" in SODA'06, depends on the NP and coNP result for concurrent reachability games, and hence also suffers from the flaw. A PSPACE bound for solving concurrent parity games is given in the draft of my thesis.

- The proof of existence of \epsilon-Nash equilibrium (NE) for general n-player concurrent reachability games, for \epsilon>0, also do not hold. The existence of such NE remains an open question.

- The results for turn-based games do not use the above proof and remain unaffected and the lower bound results also hold.

It may be noted that the present proof of the result has a flaw, though the result may be correct. In case we obtain a fix in the proof of the result, we will update the write-up with the proof.