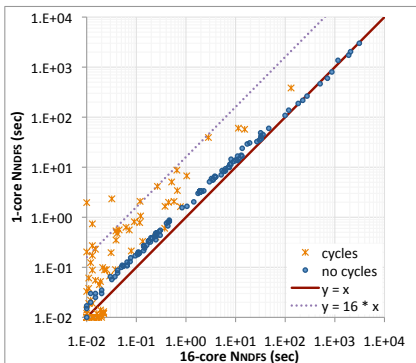


Approaches to Parallel LTL Model Checking

Speedup of Swarmed NDFS (1 versus 16 cores)



[BEEM database]

Alternatives

- ▶ **Swarm verification** with NDFS
 - ▶ Effective, only for bug finding
- ▶ **Dual-core NDFS** [Holzmann]
 - ▶ Red search on 2nd CPU
 - ▶ Speedup of at most factor 2
- ▶ Red Search as **parallel reachability**
 - ▶ Speedup still ≤ 2 : $|G| + |G|/N$
- ▶ **Can one do better?**
 - ▶ Post-order is **P-Complete**, so
 - ▶ DFS not efficiently parallelizable
- ▶ Breadth-first based:
 - ▶ **OWCTY**, MAP [Brno]
 - ▶ Not linear ($|G| \cdot h$), not on-the-fly