

1073-68-23

Saugata Basu and **Thierry Zell*** (thierry.zell@lr.edu). *A real analogue of Toda's theorem.*

Toda's theorem in classical computational complexity theory states that decision problems belonging to the polynomial hierarchy can be solved in polynomial time if given access to an oracle solving problems from Valiant's class $\#P$. We prove an analogue of Toda's result in the context of the Blum-Shub-Smale model of computation over the reals. If the analogous classes are straightforward to define, the proof is drastically different from Toda's own; it is topological in nature, and relies on the computation of a descent spectral sequence. (Received June 29, 2011)