FACULTY
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Advisor's report on Master thesis of Parth Mittal "Pseudorandom walks and chip firing games"

The thesis of Parth Mittal studies two aspects of pseudorandom walks on graphs. One of them is the simulation of computation by chip-firing games of Bjorne and Lovasz, and the other is the discrepancy of so called rotor router model and fully random walks. The thesis provides original results on both subjects. (Except for as the author found out in the final days of preparation of the thesis the results on the simulation of computation by chip-firing games were already discovered by others and published.) The results on the discrepancy of rotor router model seem new and are certainly also publishable in a good computer science venue.

The thesis itself is written in pleasant English and it is nicely readable. However, I wish there was slightly more context and introduction provided in the thesis.

During the research for the thesis Parth took an active role and digested large volume of literature. The discrepancy results improve on previous bounds, and digesting the known results was not a simple feat. I am still not fully comfortable with the proofs, yet, Parth was able to extend them further. Parth is an outstanding student and it was a great pleasure to undertake this project with him. I hope he will prepare a publication from the results.

For that I recommend to accept the thesis as a master thesis, and to nominate it for distinction.

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