

# BENJAMIN S. ELIAS

# BIOGRAPHICAL SKETCH

## Professional Preparation:

Princeton University	Mathematics	B.A. degree, 2001-2005
Brandeis University	Mathematics	Ph.D. Candidate, 2005-2006
Columbia University	Mathematics	Ph.D. 2006-2011 (expected)

## Appointments:

- Graduate Teaching Assistant, Columbia University, 2007-present.
- Visiting Student, Massachusetts Institute of Technology, Fall 2009.
- Faculty Fellow, Columbia University, 2006-2007.

## Publications related to proposal:

1. B. Elias, *A diagrammatic category for generalized Bott-Samelson bimodules and a diagrammatic categorification of induced trivial modules for Hecke algebras*. Preprint 2010, expected publication 2011. [arXiv:1009.2120](https://arxiv.org/abs/1009.2120).
2. B. Elias, *A diagrammatic Temperley-Lieb categorification*, International Journal of Mathematics and Mathematical Sciences, vol. 2010, Article ID 530808, 47 pages, 2010. <http://www.hindawi.com/journals/ijmms/2010/530808.html>.
3. B. Elias and D. Krasner, *Rouquier complexes are functorial over braid cobordisms*, Homology, Homotopy and Applications, Vol. 12 (2010), No. 2, pp.109-146. <http://intlpress.com/HHA/v12/n2/a4/>.
4. B. Elias and M. Khovanov, *Diagrammatics for Soergel categories*. Preprint 2009, expected publication 2011. [arXiv:0902.4700](https://arxiv.org/abs/0902.4700).

## Other Publications:

1. B. Elias, L. Silberman and R. Takloo-Bighash, *Minimal permutation representations of nilpotent groups*, Journal of Experimental Mathematics, Volume 19, Issue 1 (2010), 121–128. <http://akpeters.metapress.com/content/xh56423239233163/fulltext.pdf>.

## Synergistic Activities

- Teaching assistant for REU at Columbia, teaching undergraduates diagrammatic categorification. Summer 2008.
- Gave talks to Undergraduate math society every year at Columbia.
- Referee for International Journal of Math. and Math. Sciences, and Journal of Knot Theory and its Ramifications.
- Participant and organizer of local seminars at Columbia, including a seminar on perverse sheaves and the Weil conjectures.
- Departmental Graduate Representative, 2007-2009. Involved meeting with traveling REUs and discussing graduate student life.

## Collaborators and Other Affiliations

*Collaborators:* Mikhail Khovanov (Columbia U.), Daniel Krasner (UCLA), Marco Mackaay (Universidade do Algarve), Euiyong Park (Seoul National U.), Lior Silberman (U. British Columbia), Ramin Takloo-Bighash (U. Illinois Chicago), Pedro Vaz (Universitat Zurich), Geordie Williamson (Oxford U.)

*PhD thesis advisor:* Mikhail Khovanov, Columbia University.

*Sponsoring scientist:* Roman Bezrukavnikov, Massachusetts Institute of Technology.