

PUBLICATIONS

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- Published* — Schubert calculus and torsion explosion,
(with an appendix by Alex Kontorovich, Peter McNamara and Geordie Williamson),
J. Amer. Math. Soc. 30 (2017), no. 4, 1023–1046.
- Local Hodge theory of Soergel bimodules,
Acta Math., 217(2) (2017), 341–404.
- The Hodge theory of the Decomposition Theorem** (after de Cataldo and Migliorini),
Astérisque, 390 (2017), 335–367.
- Kazhdan-Lusztig conjectures and shadows of Hodge theory*,
(with Ben Elias), in "Arbeitstagung Bonn 2013". Progress in Mathematics, 319, Birkhäuser, 2016.
- On cubes of Frobenius extensions,
(with Ben Elias and Noah Snyder), in "Representation theory - current trends and perspectives",
EMS Ser. Congr. Rep., Eur. Math. Soc., Zürich, 2016.
- On torsion in the intersection cohomology of Schubert varieties,
J. Algebra 475 (2017), 207–228 (Sandy Green memorial volume).
- The p -canonical basis for Hecke algebras,
(with Thorger Jensen), in "Categorification in Geometry, Topology and Physics", *Contemp. Math.*,
583 (2017) 333–361.
- Soergel calculus,
(with Ben Elias), *Represent. Theory* 20 (2016), 295–374.
- Parity sheaves and tilting modules,
(with Daniel Juteau and Carl Mautner), *Ann. Sci. Éc. Norm. Supér.* (4) 49 (2016), no. 2, 257–275.
- A reducible characteristic variety in type A ,
in "Representations of reductive groups, in honor of the 60th birthday of David Vogan", Birkhäuser, 2015.
- Appendix to : Modular perverse sheaves on flag varieties I : tilting and parity sheaves,
(with Pramod Achar and Simon Riche), *Ann. Sci. Éc. Norm. Supér.* (4) 49 (2016), no. 2, 325–370.
- Parity sheaves, moment graphs, and the p -smooth locus of Schubert varieties,
(with Peter Fiebig), *Ann. Inst. Fourier (Grenoble)*, 64 (2014), no. 2, 489–536.
- Standard objects in 2-braid groups,
(with Nicolas Libedinsky), *Proc. Lond. Math. Soc.* (3) 109 (2014), no. 5, 1264–1280.
- Kumar's criterion modulo p ,
(with Daniel Juteau), *Duke Math. J.* 163 (2014), no. 14, 2617–2638.
- Parity sheaves,
(with Daniel Juteau and Carl Mautner), *J. Amer. Math. Soc.* 27 (2014), no. 4, 1169–1212.
- The Hodge theory of Soergel bimodules,
(with Ben Elias), *Ann. of Math.* (2) 180 (2014), no. 3, 1089–1136.
- Modular Koszul duality,
(with Simon Riche and Wolfgang Soergel), *Compos. Math.* 150 (2014), no. 2, 273–332.
- Characteristic cycles and decomposition numbers,
(with Kari Vilonen), *Math. Res. Lett.*, 20 (2013), no. 2, 359–366.
- On an analogue of the James conjecture,
Represent. Theory 18 (2014), 15–27.
- Modular intersection cohomology complexes on flag varieties,
(with an appendix by Tom Braden), *Math. Z.* 272 (2012), no. 3–4, 697–727.

- The geometry of Markov traces,
(with Ben Webster), *Duke Math. J.* 160, (2011) 2, 401-419.
 - Singular Soergel bimodules,
Int. Math. Res. Not. IMRN (2011), no. 20, 4555–4632.
 - Perverse sheaves and modular representation theory,
(with Daniel Juteau and Carl Mautner), *Sémin. Congr.* 24–II (2012), 313–350.
 - A geometric model for Hochschild homology of Soergel bimodules,
(with Ben Webster), *Geom. Topol.*, 12 (2008), 1243–1263.
- Accepted*
- Diagrammatics for Coxeter groups and their braid groups,
(with Ben Elias), to appear in *Quantum topology*.
<http://arxiv.org/abs/1405.4928>
 - Soergel calculus and Schubert calculus,
(with Xuhua He), to appear in *Bull. Inst. Math. Acad. Sin. (N.S.)*, Lusztig’s 70th birthday volume.
<http://arxiv.org/abs/1502.04914>
 - A geometric construction of colored HOMFLYPT homology,
(with Ben Webster), to appear in *Geom. Topol.*.
<http://arxiv.org/abs/0905.0486>
 - The Hodge theory of the Hecke category*,
EMS prize lecture, to appear in the Proceedings of the 7th European Congress of Mathematics.
<http://arxiv.org/abs/1610.06246>
 - Algebraic representations and constructible sheaves*,
(Takagi lecture), to appear in *Japanese Journal of Mathematics*.
<http://arxiv.org/abs/1610.06261>
 - Tilting modules and the p-canonical basis,
(with Simon Riche), to appear in *Astérisque*.
<http://arxiv.org/abs/1512.08296>
 - A non-perverse Soergel bimodule in type A,
(with Nicolas Libedinsky), to appear in *Comptes Rendus Mathématique*.
<http://arxiv.org/abs/1707.08249>
- Submitted*
- On the character of certain tilting modules,
(with George Lusztig).
<http://arxiv.org/abs/1502.04904>
 - Free-monodromic mixed tilting sheaves on flag varieties,
(with Pramod N. Achar, Shotaro Makisumi and Simon Riche).
<http://arxiv.org/abs/1703.05843>
 - Koszul duality for Kac-Moody groups and characters of tilting modules,
(with Pramod N. Achar, Shotaro Makisumi and Simon Riche).
<http://arxiv.org/abs/1706.00183>
 - Relative hard Lefschetz for Soergel bimodules,
(with Ben Elias).
<http://arxiv.org/abs/1607.03271>
 - Billiards and tilting characters for SL_3 ,
(with George Lusztig).
<http://arxiv.org/abs/1703.05898>
- Preprints*
- The anti-spherical category,
(with Nicolas Libedinsky).
<http://arxiv.org/abs/1702.00459>
- * = refereed survey article, ** = not refereed.

TRANSLATIONS

- *Representations of the Group $SL_2(\mathbb{F}_q)$* , by Cédric Bonnafé, Springer Verlag, 2010.

CONFERENCE PROCEEDINGS

- *On tilting characters for SL_3* ,
Oberwolfach report for meeting “Algebraic Groups”, May 2017.
- *Tilting modules and the anti-spherical quotient*,
Oberwolfach report for meeting “Representations of finite groups”, May 2015.
- *The Hecke algebra and Soergel bimodules*,
Oberwolfach report for meeting “Algebraic Groups”, April 2013.
- *Some applications of parity sheaves*,
Oberwolfach report for meeting “Geometric representation theory”, March 2012.
- *Checking Lusztig’s conjecture around the Steinberg weight*,
Oberwolfach report for meeting “Finite groups”, April 2012.

THESIS AND ESSAYS

- *Singular Soergel bimodules*,
Doctoral thesis, Albert-Ludwigs-Universität Freiburg, 2008.
- *Why the Kazhdan-Lusztig basis of the Hecke Algebra is a Cellular Basis*,
Essay, University of Sydney, 2003.