

# Hiroyuki NAKAOKA

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Nationality: Japanese

Born at March 1982

## Research Interests

Categorical framework appearing in algebra

- Homological structures on triangulated and abelian categories
- Mackey functor, Tambara functor, biset functor
- 2-categorical homological algebra

## Positions held

Oct. 2010 – **Associate Professor**, *Faculty of Science and Engineering, Kagoshima University, Kagoshima.*

(Feb.2014 –Feb.2016 JSPS Postdoctoral Fellowship for Research Abroad, at LAMFA, Université de Picardie-Jules Verne, Amiens.) (\* JSPS= Japan Society for the promotion of science)

June 2009 **Project Research Associate (=project assistant professor)**, *Graduate School of Mathematical Sciences, the University of Tokyo, Tokyo.*

Apr. 2009 **Project Researcher (=postdoc)**, *Graduate School of Mathematical Sciences, the University of Tokyo, Tokyo.*

## Education

2006–2009 **Ph.D.**, *Graduate School of Mathematical Sciences, the University of Tokyo.*  
Advisor: Prof. Toshiyuki Katsura

2004–2006 **M.S.**, *Graduate School of Mathematical Sciences, the University of Tokyo.*  
Advisor: Prof. Toshiyuki Katsura

2000–2004 **B.S.**, *Department of Mathematics, University of Tokyo.*

## Ph.D. Dissertation

title *Brauer groups, Mackey and Tambara functors on profinite groups, and 2-dimensional homological algebra*

## Master thesis

title *On a generalization of the algebraic structure on SCG and 2-categorical homological algebra*

## Grants and Awards

- Feb. 2014 **JSPS Postdoctoral Fellowship for Research Abroad.**  
–Feb. 2016
- Apr. 2013 **Grant-in-Aid for Young Scientists(B), No.25800022.**  
–Mar. 2017
- Apr. 2010 **Grant-in-Aid for Young Scientists(B), No.22740005.**  
–Mar. 2012
- Apr. 2007 **JSPS Research Fellow, Graduate School of Mathematical Sciences, the University of Tokyo, Tokyo.**  
–Mar. 2009
- Apr. 2006 **Research assistant for the 21st Century COE Program, Graduate School of Mathematical Sciences, the University of Tokyo, Tokyo.**  
–Mar. 2007
- Sep. 2010, MSJ Takebe Katahiro Prize for Encouragement of Young Researchers, The Mathematical Society of Japan.
- Mar. 2009, The Graduate School of Mathematical Sciences Dean's Prize, the University of Tokyo.

## Publication

1. "Biset functors as module Mackey functors, and its relation to derivators", *Communications in Algebra* **44** (2016) 5105–5148.
2. "Equivalence of hearts of twin cotorsion pairs on triangulated categories", *Communications in Algebra* **44** (2016) 4302–4326.
3. "Partial Tambara structure on the Burnside biset functor, induced from a derivator-like system of adjoint triplets", *Journal of Algebra* **451** (2016) 166–207.
4. "A Mackey-functor theoretic interpretation of biset functors", *Advances in Mathematics*. **289** (2016) 603–684.
5. "Biset transformations of Tambara functors", *Journal of Algebra*, **399** (2014) 904–926.
6. "The spectrum of the Burnside Tambara functor on a finite cyclic  $p$ -group", *Journal of Algebra*, **398** (2014) 21–54.
7. "A generalization of the Dress construction for a Tambara functor, and its relation to polynomial Tambara functors", *Advances in Mathematics*, **235** (2013) 237–260.
8. "General heart construction for twin torsion pairs on triangulated categories", *Journal of Algebra*, **374** (2013) 195–215.
9. "Ideals of Tambara functors", *Advances in Mathematics*, **230** (2012) no.4-6, 2295–2331.
10. (with N. Abe) "General heart construction on a triangulated category (II): associated homological functor", *Applied Categorical Structures*, **20** (2012) no.2, 161–174.
11. "On the fractions of semi-Mackey and Tambara functors", *Journal of Algebra*, **352** (2012) no.1,79–103.
12. "General heart construction on a triangulated category (I): unifying t-structures and cluster tilting subcategories", *Applied Categorical Structures*, **19** (2011) no.6, 879–899.
13. "Tambarization of a Mackey functor and its application to the Witt-Burnside construction", *Advances in Mathematics*, **227** (2011) no.5, 2107–2143.
14. "Comparison of the definitions of abelian 2-categories", *Tsukuba Journal of Mathematics*, **34** (2010) no.2, 173–182.
15. "Tambara functors on profinite groups and generalized Burnside functors", *Communications in Algebra*, **37** (2009) no.9, 3095–3151.
16. "Cohomology theory in 2-categories", *Theory and Applications of Categories*, **20** (2008) 542–604.
17. "Structure of the Brauer ring of a field extension", *Illinois Journal of Mathematics*, **52** (2008) no.1, 261–277.