

ERC Starting Grant Seminar

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StG-2017 (PE3)



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Uppsala, June 1st 2018

Pre-Writing

Start thinking early: when to apply & project idea

- Ph.D. 2009 + maternity leave for 2 kids: until StG-2019
 - 2013: thoughts on applying, but got other grants in 2014
 - 2014-2016: Worked on funded research projects but slowly developed new larger project idea
 - Early 2016: decided to apply for StG-2017
 - Could have failed 2017 with a B-grade and still applied 2019
 - Deadline Oct 18th 2016
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Writing Process

It takes time! Start early & dedicate time

- Pitched idea with 2 senior researchers in June (-4 months)
 - Writing for 2 full-time weeks early Sept
 - Serious feedback mid Sept
 - Rewriting (same idea, changed presentation)
 - More feedback early Oct
 - Final touches mid Oct
 - Submitted 16 Oct
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Writing

- **B1:** 5 pp (extended synopsis) + CV + track record
 - CV: explain achievements, grants, prizes etc.
- **B2:** 15 pp
 - Wrote B2 first, then shortened and strengthened pitch in B1
 - Iterative process, B1 \leftrightarrow B2
 - No equations, a few figures
- Ask for feedback from seniors you trust (multiple times)
 - Schedule time for complete revisions

Project



ODDSUPER: New mechanisms and materials for odd-frequency superconductivity

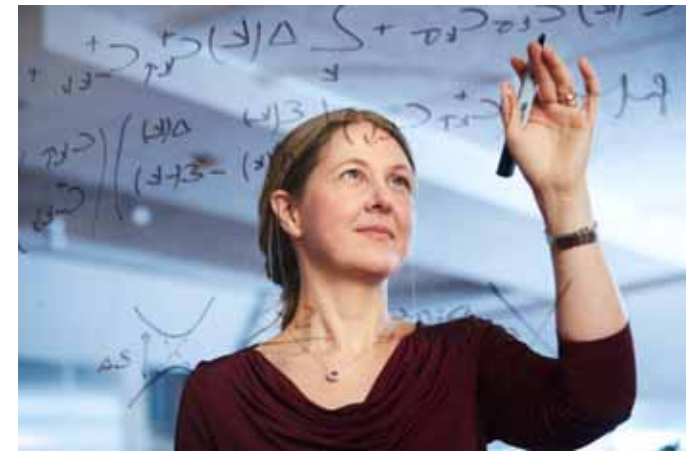
- Not main stream (“quirky”), so had to work on importance
 - I had some key publications, but
 - A bit old (2012-2015)
 - Not in high-impact interdisciplinary journals (Phys. Rev. B)
 - Only moderate # citations (30 citations each)
 - 1 of 5 subprojects was extension of funded projects
 - Some method (numerical) development
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ODDSUPER

New mechanisms and materials for odd-frequency superconductivity

Overall objective:

Much deeper understanding of superconductivity
& entirely new functionalities



Annica Black-Schaffer

Associate Professor

Uppsala University, Sweden

Ph.D. Stanford University, USA

Subprojects

A: Superconducting
gradients

B: Multiband
systems

C: Topology and
odd- ω pairing

D: SF structures

E: New odd- ω signatures

Methods

Large-scale, fully quantum, and
self-consistent framework

Analytic Green's functions
techniques

Research Team

ODDSUPER

Stanford PhD, NORDITA postdoc

Superconductivity and hybrid structures, graphene, topological insulators and superconductors, impurities

Uppsala faculty

Topological superconductors, functional Dirac materials, **odd- ω superconductivity**

Current group: 4 PhDs & 5 postdocs

Graduated members: 1 PhD & 1 postdoc

41 publications w/o PhD/postdoc advisors

40 publications as first/last author

Citations: ~~984~~ 1279, h-index: ~~16~~ 18 (since submission)

ERC starting grant

- Senior postdoc fellow (A - E)
- Postdoc (A + C + E)
- Postdoc (B + E)
- PhD (numerics + D)
- PhD (analytics + E)

Local environment

- Ab-initio (DFT) calculations
- Non-equilibrium physics

International collaborations

Final Thoughts

- Need a larger project idea (up to 15MSEK)
 - Novel, not too main stream
 - High-risk/high-gain
 - Manage risk, independent subprojects or plan B
 - Make your unique advantage very clear
 - Start early and schedule plenty of time for (re)writing
 - Get feedback from people with experience
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QUESTIONS?

