Tips on Writing a Successful NSF CAREER proposal

Ioana Dumitriu

May 4th, 2009
About Me

- **Assistant Professor**, Department of Mathematics (since '06)
- **Adjunct Assistant Professor**, Department of Applied Mathematics (since '08)
- PhD from MIT, Applied Mathematics, '06 (*Random Matrices*)
- Post-doc (Miller Fellowship, Mathematics) at UC Berkeley, '03-'06 (*Numerical Analysis, Numerical Linear Algebra*)
Proposal record

- Had never written a proposal prior to coming to UW
- Wrote a regular, 3-year, basic NSF proposal (submitted **Aut '06**)
  REJECTED
- Wrote an NSF CAREER proposal (submitted **Sum '08**)
  ACCEPTED*
  * = not officially through yet
The '06 proposal was submitted to DMS, Applied Mathematics
- Very ambitious research plan in *Random Matrices*
- Details a little sketchy
- Fairly simple *Broader Impact* statement
- Was judged to be perhaps too ambitious
- Was also judged perhaps not to be applied enough
The '08 (CAREER) proposal was submitted to DMS, Applied Mathematics
- Tied in *Random Matrices, Numerical Linear Algebra, and Scientific Computing*
- Title: “Synergistic Interactions between [...]”
- Proposed problems build on existing work; new projects; and one hard, important problem
- Wrote in a diversified educational component
What I have learned

- A good proposal should have a strong unifying theme
- One should submit to the right program (and write accordingly)
- Good writing really matters as much as good ideas/projects
Tips for the Proposal Structure

- Intro: place for self-promotion and expertise advertising
- Break up into sections corresponding to problems, and subsections (description, proposed approach, etc.)
- Pictures help! But put in relevant pictures
- Titles, subtitles, spaces, bold script, italics, underlines
- Make it readable and very clear
Tips for the Proposal Content

- Emphasize the importance of the problem in each section
- Put in enough content to give a general idea/intuition (slightly more than colloquium-style); pictures, tables, etc.
- Also put in a few technical details for the experts
Tips for the Educational Component

- Diversify:
  - Classes and student mentoring
  - Lecture notes, book
  - Intradepartmental activities
  - Interdepartmental activities
  - University-wide initiatives
  - Outreach programs

- Put in things that you are likely to be involved in anyway; strike a balance so you don't end up with too much on your plate
Tips for Writing and Editing

- Have both an expert and a non-expert read proposal and pay close attention to their comments
- Write convincingly and confidently
- Include “easy pickings” as well as ambitious projects
- Ask for everything you want, they will cut budget anyway
- Talk to your program director at NSF
One more word on “Border” or “Fence” projects

- There may be special programs to apply to
- If not, may be a hard sell (is it X or Y?) so choose program wisely (more likely to be interested in problem?... more likely to have money? )
- Think business-like: turn weakness into strength. Explain why YOUR background makes YOU uniquely qualified to work on the problem
- Unique perspective of both fields, as well as tool and technique accessibility
- Write proposal with program in mind
In Conclusion...

BEST OF LUCK!