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MATHEMATICS DEPARTMENT MENTORING PROGRAM

HENRY C. PINKHAM
CHAIR

This document describes the current mentoring practices in the Mathematics Department. We feel that it works very well, as the success of our recent junior faculty members proves.

The Mathematics Department currently has few tenure–track junior faculty members, even though it has in recent years used that position to recruit at the senior level. In fact many of our recently tenured faculty were tenure–track faculty members here before being promoted.

Most of our current junior faculty hold Ritt Assistant Professorships. These are four-year jobs where it is explicitly stated at the start that there will be no consideration for promotion. Most top–tier mathematics departments offer similar jobs.

Our mentoring is the same for both tenure-track faculty and Ritt Assistant Professors.

1. RESEARCH MENTORING

Every junior faculty hire is a member of one of at least one the fields of mathematics covered by the department: analysis, geometry, number theory, representation theory, probability, topology. The senior members in the junior faculty member's field act as advisors. The research mentor emerges naturally from this group, because there is a commonality of research interests and approaches. The junior faculty member chooses a senior faculty member from this groups as mentor. This choice can vary if the junior faculty member so chooses. Below the 'mentee' is called the advisee, in order to avoid an awkward word.

In mathematics departments the tradition is to have a single research mentor. For example departments admit every year post-docs supported by NSF. The applicants for these postdoctoral positions must state in their application which faculty member they propose to work with. Our arrangement for junior faculty members is the same: junior faculty come with a good idea of who they want to work with, and select that person as their mentor.

Because we have weekly seminars in every field, which junior faculty members are expected to attend, the mentor can follow the advisee's progress closely. It is common for the mentor and advisee to meet every week to discuss research progress. Junior faculty members are given an opportunity to speak at our seminars.

Progress is also measured by the preprints that the advisee posts on the 'archive' preprint server, available to all mathematicians. This is how specialists from other departments learn of interesting new results, which lead to invitations to speak outside Columbia.

An advisee without his or her research support can get some support from the department for travel to conferences. The existence of travel support is announced

by email from the ADA (now called the DAF) of the department. The ADA also announces by email to the entire department the deadlines for grant proposals: for example NSF proposals and Sloan fellowships. Therefore all junior faculty members are made aware of funding opportunities.

The mentor also keeps the advisee up to date on interesting conferences that the advisee might want to attend, or on special month–long or semester– long events at institutions such as IAS, the Simons center in Stony Brook, MSRI in Berkeley or IHES near Paris. The mentor makes every effort to get the advisee support from the outside institution. The department provides leave–without–pay whenever necessary, given strong enough support from the mentor, to attend semester–long events during which the junior faculty member is supported by the inviting institution..

Junior faculty typically do not advise graduate students, except as second readers. There is no expectation that they will.

2. Teaching Mentoring

Several different individuals in the department provide teaching support for junior faculty (as well as the graduate students who teach first–year calculus). They are:

- the Director of Undergraduate Studies;
- the Calculus Director;
- the section leader of the appropriate calculus section or service course.

The teaching mentor observes the advisee's classes and gives feedback. The teaching mentor also provides information on the structure of the Columbia undergraduate schools (since we teach students from the College, GS, Barnard, SEAS, the postbac premed program). The Calculus Director is usually an expert on CourseWorks and the Directory of Classes. The Calculus director provides information on the art of writing a syllabus, assigning homework, writing exams, grading according to the curve we use, and on the evaluation system. He or she transmits this information to the junior faculty members in their first semester here. The teaching advisor also explains the guidelines for using teaching assistants. Our administrator for the undergraduate program also provides information and distributes documents, most of which are also on our website.

3. Rules and Regulations Advice

It is common for the research mentors to refer their advisees to the ADA of the department for information on rules, regulations both of the department and of the university, since the ADA usually has more complete and up–to–date information than they do. For example the ADA refers junior faculty to the right person to consult on grants, leave, benefits, housing and school issues.

4. SERVICE ADVISING

We never require junior faculty members to provide service either to the department or the university. The only exception is that we may ask a tenure–track faculty member to act as an advisor in one of our joint undergraduate majors (in recent years this has only happened in the Economics-Mathematics joint manor, which requires a specific background), or as an advisor in the MAFN (masters in finance program). We do ask junior faculty members to assist in the organizations of conference and to participate in the selection of speakers for our weekly seminars. We view this as valuable career training.

5. LIST OF CURRENT ADVISEES AND MENTORS

Here is a list of the junior faculty members who will be here in 2015–2016 , with their field and their faculty mentors. Some have several mentors, and some of the mentors plan to advise mainly on the teaching side. All of them are Ritt Assistant Professors.

Name	Field	Mentor
Yiwei She	Algebraic Geometry	de Jong
Zeitlin, Anton	Representation Theory	Khovanov
Zhang, Xiangwen	Analysis	Wang, Phong
Deopurkar, Anand	Algebraic Geometry	de Jong
Chen, Po-Ning	Differential Geometry	Wang
Altug, Salim	Number Theory	Goldfeld
Drewitz, Alexander	Math Physics, Probability	Corwin
Chang, Hector	Analysis	Savin
Di Cerbo, Gabriele	Algebraic Geometry	de Jong
Wan Xin	Number Theory	Urban
Diogo, Luis	Symplectic Topology	Abouzaid, McDuff
Jeon Bo Gwang	Geometry, Topology	Neumann
Hansen, David	Number Theory	Harris, McDuff
Guo Bin	Differential Geometry	Phong
Alishahi, Akram	Geometry, Cell manifolds	Abouzaid, Lipshitz, McDuff
Li Chao	Number Theory	Zhang
Shen Hao	Math Physics, Probability	Corwin

Marcel Nutz, who is formally a tenure–track faculty member in the Statistics Department, is advised by Ioannis Karatzas in the Mathematics Department. We also have a tenure–track junior faculty member, Daniela De Silva, who has been very well advised , and who will be considered for tenure at Barnard next year.