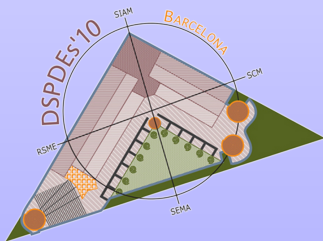


Panel on Funding and Postdocs: Perspectives in USA and Europe

Douglas N. Arnold, SIAM President
Joaquim Bruna, CRM Director
Pavel Exner, EMS Vice President



DSPDES '10

1 June 2010

Postdoctoral positions in the U.S. open to non-US-citizens

- **Non-tenure-track assistant professorships**
 - Funded by the university
 - 2–3 years
 - Moderate teaching duties
 - High degree of independence
- **Postdocs funded through senior researcher's grant or other funds**
 - Funded by US govt
 - 1–3 years
 - Little or no teaching
 - Often directed research
- **NSF (National Science Foundation) math institutes**
 - NSF funds 8 math insts
 - \exists other centers as well
 - 6 months–3 years
 - Little or no teaching
 - Research related to institute programs
 - Usually include non-US citizens



Traffic Gridlock >



Better Seismic Imaging >



The geometry of PDEs >



Auto safety system >



When The Volcano Blows >

[More highlights >](#)

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Search math institutes [Joint Institutes' Postdoctoral Positions](#)[Job opportunities for mathematical scientists](#)**Other NSF Supported Mathematics Institutes:**BIRS
IHES
MEQ[International Math Sciences Institutes](#)[Math Institute Diversity Committee](#)[Climate Change & Sustainability Program Initiative](#)**AIM (American Institute of Mathematics)**<http://www.aimath.org>
Palo Alto, California

AIM fosters progress in all areas of mathematics through focused collaborative research.

[AIM Events](#)**IAS (Institute for Advanced Study)**<http://www.math.ias.edu>
Princeton, New Jersey

The Institute for Advanced Study is an independent, private institution dedicated entirely to the encouragement, support and patronage of learning through fundamental research and definitive scholarship across a wide range of fields.

[IAS Events](#)**IMA (Institute for Mathematics and its Applications)**<http://www.ima.umn.edu>
Minneapolis, Minnesota

The IMA exists to increase the impact of mathematics by fostering interdisciplinary research linking mathematics with important scientific and technological problems from other disciplines and industry. Allied with this mission, the IMA also aims to expand and strengthen the talent base engaged in mathematical research applied to or relevant to such problems.

[IMA Events](#)**IPAM (Institute for Pure and Applied Mathematics)**<http://www.ipam.ucla.edu>
Los Angeles, California

The overall mission of the Institute for Pure and Applied Mathematics (IPAM) is to make connections between a broad spectrum of mathematicians and scientists, to launch new collaborations, to better inform mathematicians and scientists about interdisciplinary problems, and to broaden the range of applications in which mathematics is used.

[IPAM Events](#)**MBI (Mathematical Biosciences Institute)**<http://www.mbi.osu.edu>
Columbus, Ohio

The mission of the MBI is: (1) to develop mathematical theories, statistical methods, and computational algorithms for the solution of fundamental problems in the biosciences; (2) to involve mathematical scientists and bioscientists in the solutions of these problems; and (3) to nurture a community of scholars through education and support of students and researchers in mathematical biosciences.

[MBI Events](#)**MSRI (Mathematical Sciences Research Institute)**<http://www.msri.org>
Berkeley, California

The Mathematical Sciences Research Institute (MSRI) exists to further mathematical research through broadly based programs in the mathematical sciences and closely related activities.

[MSRI Events](#)**SAMSI (Statistical and Applied Mathematical Sciences Institute)**<http://www.samsi.info>
Research Triangle Park, North Carolina

SAMSI is a national institute whose vision is to forge a new synthesis of the statistical sciences and the

[SAMSI Events](#)

The Institute for Mathematics and its Applications (IMA)

- Interdisciplinary, visitor-based, math sciences research institute
- Funded (\$6.5M/yr) by the NSF (70%), University of Minnesota, consortium of affiliated universities, companies, and labs
- Mission is to increase the impact of mathematics by fostering research linking math and applications, and to build the talent base engaged in this.
- Runs many programs, including annual thematic program, with many long- and short-term visitors, workshop, etc.
- About 1,200 visitors per year, about 2/3 receive IMA support, between 20 and 30% from outside the US.

The IMA postdoc program

- Hires 8 postdocs per year in conjunction with the annual thematic program. Positions for 1–2 years.
- Postdocs spend first year deeply involved in annual program.
- Second year is optional, with various possibilities.
- In fall application process will start for postdocs beginning September 2011: Mathematics of Information.

Many DSPDES10 participants, including 3 plenary speakers, were IMA postdocs

NSF funding for international collaboration

Besides individual grants and the math Institutes, the NSF has an *Office of International Science and Engineering (OISE)* with an annual budget of nearly \$50M.

US investigators may request OISE support for new and existing NSF grants. This is given for:

- True intellectual collaboration with foreign research partner.
- *New* collaborations.
- Clear benefit to US side from foreign expertise or resources.
- Engagement of US students or junior researchers abroad.

Partnerships for Int'l Research and Education (PIRE)

- International collaborations with US scientists; international training of US students and postdocs.
- Multi-institution consortium.
- Multinational funding.
- Postdoc and student exchange, workshops, summer schools, . . .
- Sending side pays.

Example: a new PIRE grant:

Science at the Triple Point between math, mechanics, and materials

- Carnegie Mellon, Caltech, U. Minnesota, NYU
- Antwerp, U. Bonn, Oxford, MPI Leipzig, SISSA, Bosch
- NSF is providing \$5M+ for 5 yrs
- EPSRC (UK), DFG (Germany), FWO (Belgium)
- Postdocs & students travel to partner institutions.
- Summer schools and workshops at the partner institutions.



- 2-week summer school for graduate students.
- 50 students. No fees. SIAM pays most travel and local expenses.
- First school will be on **Numerical Linear Algebra** in Brindisi, Italy next week. **Lecturers:** Jim Demmel, Volker Mehrmann, Charles Van Loan, Margaret Wright.
- Second school will be on **Waves and Imaging** in Vancouver, July 3–15, 2011 (just before ICIAM). **Lecturers:** Margaret Cheney, Frank Natterer, Laurent Demanet, Josselin Garnier.

Funding and postdoc perspectives in USA and Europe

- No “European model”, in spite of Bologna. The scheme

- Outside academia

Ph.D.-

- Postdoc-Tenure track-Tenure

concretises differently in European countries; two parallel tracks: contracts-civil servants.

- No centralized information, no “postdocsjob.org” at European level. A task to be undertaken by EMS!
- Many uncertainties. Postdoc positions (typically 2 or 3 years long) are usually overlapped. Postdoc period may last 5-6 years. First permanent position in Spain: 36

1. Postdoctoral opportunities in Spain

Postdocs: Subprograma Juan de la Cierva

Convocatoria Jovenes tecnólogos (MICINN)

Programa Beatriu de Pinos de la Generalitat de Catalunya

Tenure-track: Subprograma Ramon y Cajal

2. Marie Curie Actions

Intra-European Fellowships for Career Development (IEF)

- a) Researchers from EU Member States or Associated Countries.
- b) Candidates must have either a doctoral degree or at least 4 years' full-time equivalent research experience, after obtaining a degree permitting them to embark on a doctorate.
- c) Candidates must carry out the project on the premises of a host organisation in an EU or Associated Countries other than their own.

International Incoming Fellowships (IIF)

- a) Researchers from countries that are neither EU Member States nor Associated Countries.
- b) Candidates must have either a doctoral degree or at least 4 years' full-time equivalent research experience, after obtaining a degree permitting them to embark on a doctorate.
- c) The application should be made in liaison with the organisation or institution that would be willing to host the fellow in Europe.

International Outgoing Fellowships for Career Development (IOF)

- a) Researchers from EU Member States and Associated Countries.
- b) Candidates must have either a doctoral degree or at least 4 years' full-time equivalent research experience, after obtaining a degree permitting them to embark on a doctorate.

2. Marie Curie Actions

European Reintegration Grants (ERG)

- a) Researchers from an EU Member State or an Associated Countries.
- b) Candidates must have at least 4 years' full-time research experience or a doctoral degree.
- c) Candidates must have benefited from a Marie Curie training and mobility action lasting at least 18 months.

International Reintegration Grants (IRG)

- a) Researchers from EU Member States or Associated Countries.
- b) Candidates must have at least 4 years' full-time research experience or a doctoral degree.
- c) Candidates must have been actively engaged in research in a Third Country for at least 3 years.

3. European Research Centres on Mathematics (ERCOM)

Alfréd Rényi Institute of Mathematics, Budapest (Hungary)
Centre de Recerca Matemàtica, Barcelona (Spain)
Centre International de Rencontres Mathématiques, Marseille (France)
Centro di Ricerca Matematica Ennio De Giorgi, Pisa (Italy)
Centro Internacional de Matemática, Coimbra (Portugal)
Centrum voor Wiskunde en Informatica, Amsterdam (The Netherlands)
Emmy Noether Research Institute for Mathematics, Ramat Gan (Israel)
Erwin Schrödinger International Institute for Mathematical Physics, Vienna (Austria)
Euler International Mathematical Institute, Sant Petersburg (Russia)
European Institute for Statistics, Probability and Stochastic Operations Research, Eindhoven (The Netherlands)
Forschungsinstitut für Mathematik, Zürich (Switzerland)
Institut des Hautes Études Scientifiques, Bures-sur-Yvette (France)
Institut Henri Poincaré, Jussieu (France)
Institut Mittag-Leffler, Djursholm (Sweden)
International Centre for Mathematical Sciences, Edinburgh (United Kingdom)
Isaac Newton Institute for Mathematical Sciences, Cambridge (United Kingdom)
Istituto Nazionale di Alta Matematica Francesco Severi, Roma (Italy)
Johann Radon Institute for Computational and Applied Mathematics, Linz (Austria)
Mathematical Research Institute Universiteit Utrecht, Utrecht (The Netherlands)
Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach-Walke (Germany)
Max-Planck-Institut für Mathematik in den Naturwissenschaften, Leipzig (Germany)
Max-Planck-Institut für Mathematik, Bonn (Germany)
Stefan Banach International Mathematical Center, Warsaw (Poland)
The Abdus Salam International Centre for Theoretical Physics, Trieste (Italy)
Thomas Stieltjes Institute for Mathematics, Leiden (The Netherlands)
Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany)

ERCOM Centres with postdoctoral programmes

Postdoctoral call opened to all specialities

Centre de Recerca Matemàtica, Barcelona (Spain)
Centro di Ricerca Matematica Ennio De Giorgi, Pisa (Italy)
Institut des Hautes Etudes Scientifiques, Paris
Istituto Nazionale di Alta Matematica Francesco Severi, Roma (Italy)
Isaac Newton Institute for Mathematical Sciences, Cambridge
Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach-Walke (Germany)
Max-Planck Institut für Mathematik in den Naturwissenschaften, Leipzig (Germany)
Stefan Banach International Mathematical Center, Warsaw (Poland)
Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany)
Emmy Noether Research Center in Mathematics
The Abdus Salam International Centre for Theoretical Physics, Trieste (Italy)

Postdoctoral call for specific projects

Centrum voor Wiskunde en Informatica, Amsterdam (The Netherlands)
European Institute for Statistics, Probability and Stochastic Operations Research, Eindhoven (The Netherlands)
Institut des Hautes Études Scientifiques, Bures-sur-Yvette (France)
Johann Radon Institute for Computational and Applied Mathematics, Linz (Austria)

Postdoctoral call for specific research programmes

Centre de Recerca Matemàtica
Isaac Newton Institute for Mathematical Sciences
Institut Mittag-Leffler, Djursholm (Sweden)

4. European Post-Doctoral Institute for the Mathematical Sciences

Centre de Recerca Matemàtica (CRM)

Erwin Schrödinger International Institute for Mathematical Physics (ESI)

Forschungsinstitut für Mathematik (FIM)

Institut des Hautes Études Scientifiques (IHÉS)

Institut Mittag-Leffler

Isaac Newton Institute for Mathematical Sciences (INIMS)

Mathematisches Forschungsinstitut Oberwolfach (MFO)

Max-Planck-Institut für Mathematik (MPIM, Bonn)

Max-Planck-Institut für Mathematik in den Naturwissenschaften (MIS, Leipzig)

Stefan Banach International Mathematical Center

4. European Post-Doctoral Institute for the Mathematical Sciences

Researchers from EU Member States, Associated Countries and Eastern European Countries.

They must have the PhD. Or equivalent in Mathematical Sciences, obtained in 2008 or later (in Europe or elsewhere).

They should propose a two-year itinerary with

- a) 6 to 12 month visits at EPDI institutes conducting scientific activities related to the areas of interest of the candidate and related to the research programmes
- b) at least 18 months outside their country of PhD

The itinerary can include a visit at a Japanese institution: in this case, the candidate is invited to contact the chosen institution and make sure he/she is prepared to send a file to the Japan Society for the Promotion of Science's "Post-doctoral Fellowships for Foreign Researchers" programme to fund the visit.

5. Postdoctoral Positions at Universities (I)

University of Rome “Sapienza”

Université Paul Sabatier

IRIT and GREMAQ, Toulouse

Norges Teknisk-Naturvitenskapelige Universitet, Trondheim

**Charles University, Prague (Czech Republic)
SAS ITK, Montpellier**

FEMTO-ST Institute, Besançon

Radboud Universiteit Nijmegen

University of Jyväskylä

International Centre for Theoretical Physics, Trieste

Université de Lille

University of Crete

6. European Research Council

Starting Independent Researcher Grant

- a) To support up-and-coming research leaders who are about to establish or consolidate a proper research team and to start conducting independent research in Europe.
- b) Pioneering frontier research in any field of science, engineering and scholarship.
- c) Candidates can be of any nationality, and must have obtained their PhD or equivalent degree more than two years but less than ten years prior to the opening date of the relevant call for proposals.

Advanced Investigators Grant

- a) The ERC Advanced Grant funding scheme complements the ERC Starting Grant funding scheme by targeting researchers who have already established themselves as independent research leaders in their own right.
- b) To encourage risk-taking and interdisciplinarity, and supports pioneering frontier research projects.
- c) Candidates can be of any nationality, and must be scientifically independent and have a recent research track-record and profile which identifies them as leaders in their respective field(s) of research.

7. Postdoctoral Positions in ITN Research Projects

http://cordis.europa.eu/fp7/projects_en.html

Funding and Postdoc Opportunities in Europe: ERC Starting Grants and All That

Pavel Exner

exner@ujf.cas.cz

Doppler Institute

for Mathematical Physics and Applied Mathematics

Prague



European Research Council

Having a limited time I concentrate on one opportunity coming from the *European Research Council* which is supposed to be a trend-setter in European research.

- it is a young organization, three years in existence
- the current budget is around *one billion Euro* per year, to grow to 1.7 billion in the next three years
- the development after 2013 is an open question



ERC Philosophy

Let me list a few basis features of ERC funding:

- it is strictly *bottom-up*, we do not tell people what to do
- no “juste retour”, *excellence is the only criterion*
- selection is based on *excellent peer-review* performed by topical panels with the help of remote referees
- there are *no nationality restrictions*
- ERC grants are *portable*, the Principal Investigator has the right to go with his/her money to another Host Institution



ERC Grants

ERC has two main funding streams, *Advanced Grants* without any age restrictions, and more relevant for the present discussion, *Starting Grants* given under the following conditions:

- the grant lasts *up to five years*
- the grant range is *100-300 kEuro/ year*
- the age window is *2-12 years after PhD*
- the applications are streamed into two groups, *starters* and *consolidators*, with roughly the same chances in both categories
- the success rate is now *around 15%*



Additional opportunities

Apart from winning an ERC Starting grant, there can be other benefits and opportunities:

- according to present Starting Grant winners, even *passing to the second stage* and invitation to the interview brings a lot of prestige, sometimes with a tenure offer
- some *national agencies* take over the semifinalists who were not supported due to the lack of money, even without an additional evaluation
- almost all ERC Starting and Advanced Grants involve groups having *postdoc positions* to assist the Principal Investigator

