

# News & Events in Physics

## ( 10th Anniversary of the Pappalardo Fellowships in Physics



L. Barry Hetherington

*Neil and Jane Pappalardo*

The 2009–2010 academic year wrapped up the phenomenally successful first decade of the **Pappalardo Fellowships in Physics**, the Department's premier postdoctoral fellowship program. Created as a vehicle to both recruit outstanding young physicists to the Department and nurture their growing careers with independently-funded research support and faculty mentoring, the program continues to be entirely sustained through the generosity of its founder and benefactor, **A. Neil Pappalardo** (EE '64).

### NEIL PAPPALARDO AND THE MIT PAPPALARDO FELLOWSHIPS IN PHYSICS

#### **Neil Pappalardo's first involvement with the MIT physics**

department was a generous funding of MIT's share of the five-member Magellan Telescopes consortium at Las Campanas Observatory in southern Chile. Professor Claude Canizares, then Director of MIT's Center for Space Research, spoke with Neil about his concern over the Department's ability to attract the best young optical astronomers if it lacked access to one of the great telescopes, and told him of the Magellan opportunity. Neil agreed with Claude's concerns, and readily responded with his support.

Next, Neil approached Department Head Marc Kastner. "I would like to continue to support the Physics Department," he said. "Please let me know what the Department needs most." As it happened, both Marc and Dean of Science Robert Birgeneau had been doing a lot of thinking recently about how the Department's competitors were recruiting some of the best young

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As with so many aspects of his life, when Neil Pappalardo thinks about philanthropy he has a specific plan in mind. Ten years ago, said Neil, “I wanted to know the most important thing I could do for the Department. I asked the department head and faculty to ‘huddle’ and come to a decision. What was the one thing I could do that would make the Department better than it is currently?”

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physicists. Harvard University, for example, had its renowned Society of Fellows, established in the 1930s, with its freedom to pursue postdoctoral research without any formal requirements. It was well-known that many of the physics department faculty at MIT and its peer institutions were former Harvard Junior Fellows. If MIT could develop a similar program, it would give the Department a number of clear advantages.

Bob and Marc met with Neil and presented him with a proposal to fund a distinguished postdoctoral fellowship program for MIT physics. The program, they all agreed, needed to be well-defined and managed, with a designated administrator and formal opportunities for mentoring the Fellows. Most importantly, Fellows should be free to pursue scientific research of their choosing. It would be a three-year fellowship with three new Fellows appointed each year; participation in the annual selection competition would be by faculty nomination only. A rotating committee of MIT physics faculty would review and select the Fellows, and invite the top candidates to MIT to give a presentation of their work before a panel of the Committee members.

By these means, the Department would meet and get to know some of the most talented young women and men in the physics community. It would learn about new and exciting areas of research pursued by the up-and-coming generation, and it was hoped that, in time, junior faculty could be recruited from this pool of promising postdoctoral fellows.

It was a well-conceived proposal and Neil was on board. He agreed to establish the MIT Pappalardo Fellowships in Physics program and fund it for an initial five-year period. At the close of that time, he would meet with the department head and faculty to evaluate its relative success or failure. Neil wanted to be certain that the program was viable before establishing it in perpetuity, but he also wanted to give it every opportunity for success. “I am

very skeptical of programs that donors initiate, which often end up costing MIT much more than the donor is willing to pay." So, Neil insisted on fully subsidizing the entire cost of the program, including medical insurance for the Fellows and their families, their annual stipends, the program's annual symposium and dinner, and even the weekly and monthly social events that promote the mentoring and collaboration between the Fellows and the faculty.

Privately, thinking of the long genesis of Harvard's Society of Fellows, Marc Kastner thought it would take decades for the Pappalardo Fellowships program to be a success, but, in fact, it took just a few years. "I knew it was a winner when the candidate numbers started to swell and a top-ranked finalist turned down a Harvard Junior Fellowship to be a Pappalardo Fellow at MIT. He [2001–2004 Fellow Ashvin Vishwanath] is now a tenured professor at Berkeley, and one of his graduate students [2009–2012 Pappalardo Fellow Fa Wang] is among our newest class of Fellows," according to Marc.

### **By any measure, the MIT Pappalardo Fellowships program**

had become one of the premier programs of its kind in the academic community. Neil was convinced that funding this program had been the right move. He also recognized that his program succeeded in bringing the Department even closer together as a community. Through its luncheons, dinners and annual symposium event, intellectual partnerships, as well as friendships, have been created and sustained between Fellows and faculty, and even between faculty members themselves from the various subdivisions. The Department has made faculty offers to five former Pappalardo Fellows, including two women. A steadily increasing percentage of women apply, and are accepted, as Pappalardo Fellows. Both Neil and the Department agree: "We've attracted spectacular women physicists to the program from the very beginning, and it has been thrilling to see the unbelievably high caliber of all those who continue to come through the Pappalardo Fellowships program."

As the ultimate vote of confidence in the program and its continued success, Neil Pappalardo decided to endow the Pappalardo Fellowships program, ensuring it will live in perpetuity at MIT. Asked if he would have done anything differently, Neil answered: "It took about two or three years, before my wife Jane and I began hosting the Fellows and their families to our home at Rows Wharf, Boston, for an annual holiday brunch. Then, in the summer, we have them all—both current and locally-based former Fellows—come to our home in Marion for a family summer weekend. We derive so much pleasure from getting to know the Fellows and their families, hearing about their aspirations and struggles, that I just wish, in hindsight, we had initiated this interaction earlier."

## THE PAPPALARDO FELLOWS IN PHYSICS: 2000-2010

**( Nominated by prominent faculty in their respective fields,** and carefully selected by the program's Executive Committee, the Pappalardo Fellowships "alumni" continue to fulfill their early promise as talented young physicists. Here's what some of them had to say about what it meant to be a Pappalardo Fellow at MIT.



**"I am truly thankful for** having been selected as a Pappalardo Fellow, with its complete freedom to pursue my scientific interests, vibrant intellectual environment, and social privileges."

**Michael "Misha" Fogler**, Associate Professor, Department of Physics, University of California, San Diego; 2000-2003 Pappalardo Fellow



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**"The Pappalardo Fellowship** gave me unprecedented freedom to do any science I wanted, while the social events gave the opportunity to make many fabulous friendships that will last for a lifetime."

**Marin Soljačić**, Assistant Professor, Department of Physics, MIT; 2000-2003 Pappalardo Fellow



**"I was extremely fortunate** to have been a Pappalardo Fellow. This gave me an opportunity to freely explore the subject of my interest without any strings attached, and to interact with the most gifted physicists: faculty, other Pappalardo Fellows and postdocs at the MIT Department of Physics (which I think is the best physics department in the world). The only thing I regret is that by necessity I was a Pappalardo Fellow for just one short year. However, I will remember this year and the people I was fortunate to meet then with great fondness and affection."

**Ilya Gruzberg**, Associate Professor, Department of Physics, The University of Chicago; 2001-2002 Pappalardo Fellow

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**“The Pappalardo program** provided the luxury to carry out my own research, with generous support, in an inspirational environment. The highlight of every week was the lunch, hearing about physics from cold atoms to cosmology. I had not learned so much since I was an undergraduate. The Pappalardo Fellowship was the making of my career as a physicist.”

**David Tong**, Reader [Associate Professor] and Fellow of Trinity College, University of Cambridge; 2001–2004 Pappalardo Fellow



**“My three years as a** Pappalardo Fellow was probably the most exciting period of my research career. The regular events meant that I was connected to smart people outside my research group—something that I have missed ever since I left MIT.”

**Ashvin Vishwanath**, Associate Professor, Department of Physics, University of California, Berkeley; 2001–2004 Pappalardo Fellow



**“Being part of the** Pappalardo group was very special. I always looked forward to the weekly lunches and other events where I could interact with physicists working on a wide variety of topics. It was also great to get to know the faculty, Fellows and several others on a more personal level. Most significantly, having the Pappalardo Fellowship gave me the freedom to explore new areas of biological physics that I continue to pursue today in my own lab.”

**Arpita Upadhyaya**, Assistant Professor, Department of Physics and IPST, University of Maryland, College Park; 2002–2005 Pappalardo Fellow

**“The Pappalardo Fellowship** allowed me to spend almost three years in a world-leading physics department and gave me many opportunities to work with physicists who were my heroes when I was a young student in Argentina. But I think the most important feature of my Fellowship was that it defined my career and gave me a confidence in myself I did not have before—I ceased being a postdoc and became an independent researcher, and many of my present research interests began when I was a Pappalardo Fellow.”

**Carlos Nunez**, Lecturer [Assistant Professor], School of Physical Sciences, Swansea University, UK; 2002–2005 Pappalardo Fellow

## THE PAPPALARDO FELLOWS IN PHYSICS: 2000-2010



### “The Pappalardo Fellowship

is more than just a postdoc in a great physics department. The Fellows are welcomed by the faculty and integrated into the life of the whole department in a way that is extremely rare for postdocs, who are usually confined to their labs. In fact, in my observation the program actually increases the amount of scientific interaction across the department at all levels. This is both because of the Pappalardo lunches and other activities, and because the scientific independence afforded to the Fellows allows them to move freely, creating new interactions and connections among different groups and different fields.”

**Matthew Headrick**, Assistant Professor, Martin Fisher School of Physics, Brandeis University; 2003–2006 Pappalardo Fellow



### “I valued my experience as

a Pappalardo Fellow because of the engaging community I came to know through its many events, and also because it fostered an atmosphere where one could dream up new projects that would not be possible for a conventional postdoc. More than one of the Fellows have seen these ideas bear fruit, leading to new and exciting areas of research. It is an example of how bringing good people together makes great and unexpected things happen.”

**Rob Simcoe**, Assistant Professor, Department of Physics, MIT; 2003–2006 Pappalardo Fellow



### “Being selected for a

Pappalardo Fellowship gave me confidence and assurance that what I was doing was interesting, and that I would be trusted to follow where my research led. During the program, I very much enjoyed being treated almost like a junior faculty member (although without as much work!), which again reflected the esteem and trust placed by the Department in me.”

**David Kaplan**, Assistant Professor, Physics Department, University of Wisconsin, Milwaukee; 2004–2007 Pappalardo Fellow



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**“The three years I spent as a Pappalardo Fellow at MIT have really been part of shaping me as an independent researcher. I am very grateful to Neil and his family for this opportunity, and for their friendship and support.”**

**Henriette Elvang**, Assistant Professor, Department of Physics, University of Michigan, Ann Arbor; 2005–2008 Pappalardo Fellow



**“The Pappalardo Fellowship program had a huge impact on my research by giving me the freedom and support to change research directions and follow my great interest in studying dark matter. I am so delighted to have had this opportunity, and to have gotten to know Neil and Jane, the other Pappalardo Fellows, and the MIT Physics Department faculty through the Pappalardo Fellowships program.”**

**Jocelyn Monroe**, Assistant Professor, Department of Physics, MIT; 2006–2009 Pappalardo Fellow



**“The Pappalardo Fellowship was such a wonderful experience I couldn’t leave!”**

**Jeff Gore**, Assistant Professor, Department of Physics, MIT; 2007–2010 Pappalardo Fellow

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## THE PAPPALARDO FELLOWSHIPS EXECUTIVE COMMITTEE

**Over the past ten years, more than 25 members** of the Department's faculty have served on the Pappalardo Fellowships Executive Committee. Each fall, our faculty continue to give their time and expertise to a meticulous, multi-step review of each Pappalardo Fellowship applicant. Thus far, nearly 1,500 candidates have been reviewed and almost 200 finalists interviewed! Here's what some of the former Committee members had to say about the experience.

**“The Pappalardo Fellowships program has** brought so much good to the Physics Department: we've hired five faculty members from its ranks and the Departmental climate has become noticeably warmer as a result of the lunches and dinners that bring together faculty and postdocs. It has been wonderful to see the improvements in the Department over the last decade arising from Neil and Jane's generosity and vision.”

**Ed Bertschinger**, Professor of Physics and Head, Department of Physics, MIT

**“It was truly amazing to me how the** Pappalardo Fellows program became, in just a few years, among the most prestigious postdoctoral fellowship programs in the world and the envy of every other physics department. Its alumni are now leading the next generation of physicists around the world, and we are beginning to see the Ph.D. students of former Pappalardo Fellows applying for the program. The program has put the MIT Department of Physics on the map in a new and important way. But what is perhaps most gratifying is the way that Neil and Jane Pappalardo have become personally connected with the Fellows. This is something that other physics departments will never be able to duplicate.”

**Marc Kastner**, Donner Professor of Science and Dean, School of Science, MIT

**“Serving on the Pappalardo Fellowships** committee was a real treat for me. After my three years of service were done, I felt lucky to get to substitute one year for Young Lee who had to be away for the birth of his son. It was wonderful to get to talk with some of the hottest new Ph.D.s in areas throughout physics, along with MIT experts who could later tell me more about the impact of the work. I was also impressed with the level of consensus that we achieved each year. People put aside parochial interests, and I finished each competition feeling that we had put together a ranked list that identified the best physicists, independent of field.”

**Ray Ashoori**, Professor of Physics, MIT

**“I can only say I have benefited more than** anyone else from the Pappalardo Fellowship program, as one of the people who started on the selection committee. I served for six years and we built up the process to what it is today. It is very intense but extremely rewarding to see the tremendous talent. On the other side, I have worked very closely with Marin Soljačić, Gabriella Sciolla and James Battat, and just had a fantastic time with all of them.”

**Peter Fisher**, Professor of Physics and Division Head, Experimental Nuclear & Particle Physics, MIT

**“This was a great committee on which to serve. Three meetings in three months produced a set of three talented young colleagues!”**

**Daniel Freedman**, Professor of Physics and Applied Mathematics, MIT

**“It was a humbling delight to meet so many talented, young physicists through the Pappalardo Fellowship selection and election process. All of us at MIT physics must be grateful to Neil for making such opportunities possible.”**

**Roman Jackiw**, Jerrold Zacharias Professor of Physics, MIT

**“Joining the first Pappalardo Executive Committee in 1999, I certainly could not anticipate how rapidly it would achieve the stated goal of attracting the very best postdoctoral prospects in physics. The first set of interviews was conducted in January 2000, and the success of the remarkable physicists (Drndic, Fogler and Soljačić) who joined the first group paved the way for those that followed. Already in the first year, the task of the selection committee was difficult, and our interviewees included several who are now physicists of high renown. Narrowing the selection of Fellows has progressed over the years to an even harder task, as the Pappalardo Fellowship is now likely the first choice of the very best young physicists. It has provided the selection committees with a difficult challenge, but the always pleasant opportunity of encountering and probing creative young minds.”**

**Mehran Kardar**, Professor of Physics, MIT

**“The Pappalardo program attracts the best young researchers in all fields of physics. Interviewing the candidates gives an overview of what are currently the hot topics in physics. I recruited one of my best postdocs by approaching him after his impressive interview for the Pappalardo Fellowship. He didn’t get a fellowship, but he accepted my offer and came to MIT. In this way, the Pappalardo program attracts more excellent postdocs than just the number of Fellows.”**

**Wolfgang Ketterle**, John D. MacArthur Professor of Physics, MIT

**“I hardly have words to express my gratitude to Neil and Jane for this visionary program they support. Serving on the Pappalardo Fellowships selection committee is one of the most uplifting things I do. It gives me great pleasure to read about and meet all the talented young people doing extraordinary science out there. The Pappalardo program makes it possible for us to bring these remarkable scientists to MIT, and academic life in the department is enriched by their presence and contributions.”**

**Nergis Mavalvala**, Professor of Physics, MIT

**“The most fun committee I have ever worked on: I learned more about physics, applicants and my colleagues in two days than sometimes in a year.”**

**Christoph Paus**, Professor of Physics, MIT

## THE PAPPALARDO FELLOWSHIPS EXECUTIVE COMMITTEE

### “For me, the two days of finalist

interviews are the highlight of the Pappalardo year. The committee members hear eighteen outstanding presentations. They challenge the finalists, who almost always rise to the challenge. With each successive interview the job of choosing Fellows becomes more difficult. One wonders how the other committee members will vote. But somehow, despite their very different backgrounds, the committee members reach remarkably similar conclusions.”

**Paul Schechter**, William A. M. Burden Professor of Astrophysics, MIT

### “The Pappalardo Fellowships program is the soul of our department.”

**Max Tegmark**, Professor of Physics, MIT

### “As a Pappalardo committee member and

ex-chair, what I enjoyed most was to interact with those young, talented Pappalardo candidates and Fellows. I am always impressed by their passion and inspired by their excitement. In just a few years, the Pappalardo Fellowship has become one of the leading fellowships in the world; I am honored to be part of it.”

**Xiao-Gang Wen**, Cecil & Ida Green Professor of Physics, MIT

### “The Pappalardo program has invigorated

physics at MIT in a big way. In many big ways, actually. The lunches and dinners bring people and ideas together in non-routine combinations, as does the selection process. One of the unique strengths of MIT physics is the high bandwidth it supports for communication across subfields, and the Pappalardo program is a major contributor to that. Each year’s symposium is a kind of summation of the state of physics, and an occasion for celebration and reflection. Above all, of course, the Pappalardo program brings some of the best and brightest young up-and-comers in physics into our continuing community, with profound benefits to both sides. I’m very proud to have had some part in all this, and even more grateful for the opportunity.”

**Frank Wilczek**, Herman Feshbach Professor of Physics, MIT

*Carol Breen, Communications & Pappalardo Fellowships Program Administrator;  
and Elizabeth Chadis, Assistant Dean for Development, School of Science*