The Stanford Optical Society

Stanford University Student SPIE Chapter
Annual Report
February 2014 – January 2015

Officers

Co-President          Marina Radulaski, marina01@stanford.edu, 3523598
Co-President          Nikolas Tezak, ntezak@stanford.edu, 3455567
Secretary             Joshua Yoon, jyyoon@stanford.edu, 3601859
Treasurer             Sage Doshay, sdoshay@stanford.edu
Speaker Chair         Saara Khan, saarak@stanford.edu, 3525410
Outreach Chair        Adam Backer, abacker@stanford.edu, 3458250
Membership Chair      Jerry Shi, shiy@stanford.edu, 3608063
Retreat Co-Chair      Alex Diezmann, diezmann@stanford.edu, 3530162
Retreat Co-Chair      Stephen Wolf, sijwolf@stanford.edu, 3499730
Young Professionals Networking Event

Stanford University
Stanford, CA
March 10, 2014
15 participants

We invited two young optics professionals in the Bay Area to join us for dinner and talk about their post graduate school experiences. Our guests of honor were Jason Pelc (Stanford PhD, HP Labs) and Jung Park (UCSD PhD, Intel). The evening started with a reception where all of the attendees socialized in a large group, and then we split into two tables for dinner, one invited guest at each table. Halfway through the meal, the guests switched tables.

Feedback from one graduate student attendee: “It was nice seeing that people in industry do interesting research!” We received other positive feedback about how the low-key nature of the event made it welcoming and how it was helpful taking to young professionals in general. Attendees also gave recommendations of other guests they would like to see, for future events. Examples include “the difference between managerial and technical paths in the same company” and “people with optics PhDs who are now in a totally unrelated field such as consulting or law.”
Happy Hour with Pizza

Stanford University
Stanford, CA
March 12, 2012
50 participants

As part of the ongoing happy hour series organized by our membership committee throughout the academic year, we hosted a pizza party at the end of the winter quarter. The event as all our happy hours primarily served to bring the photonics community together on a regular basis. We also promoted our upcoming retreat.

Additional happy hours over the year:

July 7, 2014
August 29, 2014
September 18, 2014
January 23, 2015
The sixth annual Stanford University Photonics Retreat (SUPR 2014) proved to be a great success, as were the previous five retreats. SUPR 2014 brought together sixty Stanford graduate students and postdocs, nine Stanford faculty, and ten industry professionals for a weekend of science, networking, and career development. The student attendees came from eight departments, spanning 21 research groups. The faculty speakers included representatives from Physics, Electrical Engineering, Applied Physics, Structural Biology, and the d.school.

SUPR 2014 returned to the historic Marconi Conference Center, where Guglielmo Marconi built a wireless transmission station in 1913. The program started Friday evening with a welcome reception and dinner. The keynote was given that night by professor of Physics and Nobel Laureate Carl Wieman, who discussed “Taking a Scientific Approach to Science Education.” Professor Wieman’s talk was followed by a poster session, where half of the attending students presented their research. Friday’s program was closed out by a late-night trivia game for the students, where the teams had been assigned across research groups and departments, to facilitate meeting new people, and fostering future collaborations.

After breakfast on Saturday morning, Assistant Professor Amir Safavi-Naeini discussed his research on quantum opto-mechanics, and Research Professor Michel Digonnet discussed slow
light in optical fibers. After a coffee break, the d.school’s Dave Evans conducted a professional development workshop called “Designing the Professional”. The workshop included both the students and the faculty, and was an excellent opportunity for building relationships outside the classroom.

Saturday afternoon was designated as free time. Many attendees took the opportunity to visit one of the local Tomales Bay oyster farms, or to visit the lighthouse at Point Reyes. After dinner, Agis Mesolongitis from the augmented reality startup Meta presented his company’s head-mounted display, intended as a competitor to Google Glass. Following Agis’s talk, there was a panel discussion between four photonics industry professionals on “Making Money with Science”. The lively panel naturally transitioned to a late-night mixer, where many students stayed to talk with the panelists (and each other) about startup culture and venture capital.

Sunday morning began with the final two faculty lectures. Assistant Professor Monika Schleier-Smith discussed quantum squeezed states of light, and Assistant Professor Adam de la Zerda presented research on optics for cancer detection. The talks were followed by a second poster session, where students who had not presented on Friday had a chance to show off their research. SUPR 2014 concluded with a delicious lunch, where awards for the best research posters were given.

As many SUPR participants have attested over the last six years, SUPR provides an invaluable opportunity for graduate students who work with optics to make connections and learn new skills outside of their own departments and research groups. SUPR helps to build connections, strengthen relationships with colleagues, and foster collaborations across disciplines. We are already looking forward to our seventh annual retreat, to be held April 10-12, 2015 at the Asilomar Conference Grounds in Pacific Grove, California.
Left: Professor Schleier-Smith, right: Professor Byer with students during the workshop

Poster session

Left: Professor Wieman, right: Demo of Meta’s augmented reality “Spaceglasses”

Left: Professor Digonnet, right: Dave Evans leading the workshop “designing the professional”
We repeated our very successful and popular holography class and taught three classes of 15 students each. Students were asked ahead of time to bring a small object to be the motif of their holograms. The class started with a high-level explanation of light, waves, interference, photography, and holography. Light interference was demonstrated by showing how to measure the width of a human hair with a laser pointer. Then in small groups, students entered a makeshift dark exposure room to develop their holograms, which they got to keep.

Stanford SPLASH is a biannual event that brings in middle and high school students from the Bay Area to attend student-taught lectures on a broad variety of exciting topics.
Bay Area Maker Faire

Stanford University
Stanford, CA
May 16-18, 2014
20 chapter member volunteers, 1000s of visitors

For the fourth year, we hosted a booth at the Bay Area Maker Faire, a weekend-long faire for artists, tinkerers and Do-It-Yourself-adherents. We brought two of our most proven large optical demos: The Laser Maze and the laser harp.

For the first time, we were supported by National Instruments in the form of a special set of optics based outreach demos, assembled at the Maker Faire by Glenn Manlongat. Among the demos was a spinning Mr. Potato Head that is raster-scanned by a laser to produce a 3D representation on a computer display.
On Wednesday, May 21, Dr. Stahl visited the Stanford campus for a brief tour of the James and Anna Marie Spilker Engineering and Applied Science Building, a lunch seminar, and a meeting with the Stanford Optical Society executive board.

Dr. Stahl’s seminar was titled “50 Years of NASA Mirror Technology Development,” which drew about 35 attendees and had audience members asking questions long after the official end of the event.

Afterward, Dr. Stahl met with the chairs of all four of the Stanford Optical Society’s committees to get an overview of our chapter’s activities. We discussed some plans for the International Year of Light, as well as how SPIE and our student chapter can help each other.
Elections

Stanford University
Stanford, CA
May 23, 2014
25 participants

We held elections for the 2014-2015 Executive Board. A pizza lunch was provided.

2013-2014 Executive Planning Team

President (SPIE Affairs): Nikolas Tezak (Mabuchi Group)
President (OSA Affairs): Marina Radulaski (Vuckovic Group)
SUPR Co-Chairs: Stephen Wolf (Byer Group), Alex Diezmann (Moerner Group)
Secretary: Joshua Yoon (Moerner Group)
Treasurer: Sage Doshay (J. Fan Group)
Speaker Chair: Saara Khan (Ellerbee Group)
Membership Co-Chairs: Jerry Shi (S. Fan Group) and Joe Landry (Solgaard Group)
Outreach Co-Chairs: Adam Backer (Moerner Group), Ken Leedle (Harris Group) and Linda Zhang (Vuckovic Group)
NightLife at the California Academy of Science

California Academy of Science, San Francisco, CA

July 7, 2014
13 participants

We attended the special Chinese New Year NightLife event at the California Academy of Sciences. It was a social event in a scientific setting.

http://www.calacademy.org/events/nightlife/

SUPR Reunion BBQ

Stanford University
Stanford, CA
July 25, 2014
60 participants

We organized a BBQ during the summer quarter for everyone who went to the previous SUPR retreat. We figured that it had been over three months since SUPR happened, so we would like to organize an event to have everyone catch up a bit. We used the grill in the Allen patio, and we cooked around 60 burgers and 50 sausages for the ~60 people that showed up. This event was a huge success, because we had a wonderful turnout, and it seems that everyone really enjoyed a break where they get to catch up with people that they met at SUPR.
Information Booth at New Student Orientation

Stanford University
Stanford, CA
September 18, 2014

Attended by incoming class of Stanford graduate students

At the beginning of autumn quarter when new students are going through orientation, we set up a booth to tell everyone about our chapter and all the social, outreach, and speakers events that we host, as well as advertise the SUPR retreat that will take place in April 2015. The goal is to increase the visibility of our group at Stanford, and to have new students interested in optics sign up for our mailing list so that they can participate in the optics-related events that we host. A similar booth was set up at the Engineering Student Service Fair, on October 8, 2014, which was targeted specifically at incoming graduate students in engineering.

Welcome Back BBQ

Stanford University
Stanford, CA
October 17, 2014

60 participants

Four weeks into fall quarter, we organized a welcome back BBQ event in Allen Patio. We thought it was a good opportunity for our members to take a break during the middle of the quarter and catch up with each other. As always, we took this opportunity to introduce our activities to new members, and we advertised the retreat (SUPR) to everyone that had not heard of it.
Laser Khet Tournament

Stanford University
Stanford, CA
November 21, 2014
10 participants

Right before Thanksgiving break, we organized a Laser Khet Tournament for students to stimulate the minds of optics student with a device containing stimulated emission. Laser Khet is a laser based, prize-winning, chess-inspired board game that we use for our outreach events. We first introduced it to our student members at SUPR 2014 and its popularity there inspired us to organize this social event. The winner of the event walked away with a brand new Laser Khet set!

Stanford Fall SPLASH

Stanford University
Stanford, CA
April 11-12, 2014
3 chapter members as instructors, 45 participants
For the fall version of SPLASH, our SPIE chapter again offered the proven holography class, but also developed a new microscopy class aimed at middle/ high-school students as part of our ongoing outreach activity offerings.

Our microscopy class dealt with the basics of ray-based optics, and the fundamental features of lenses, such as focal length and f-number. Students learned how to use a portable laboratory microscope, and inspect biological specimens such as leaves, fruit skins and insects. Students also had the opportunity to use microscope lens adapters designed for iPhones, and were given their own Foldscopes (see www.foldscope.com) – pocket-size microscopes costing less than 1 USD provided by the Prakash lab at Stanford.

Left: Hologram Exposure, right: Successful holographers presenting their holograms
Careers in Optics Panel + Professional Photoshoot

Stanford University
Stanford, CA
September 10, 2014
3 panelists + 40 participants

To prepare optics graduate students and postdocs for their future job search, the Stanford Optical Society organized the Careers in Optics Panel, followed by a professional photoshoot. The panelists were professionals from HP Labs, Sandia Labs and Corning Inc. who actively participate in the hiring process for optics related positions. The discussion consisted of a facilitated Q&A session and two sample CV analyses, which provided the 40 participants with concrete and field-specific career advice. After the panel, many participants made use of the opportunity to take a signature photo on Stanford’s Main Quad, to use for their CV and LinkedIn profiles.
Networking Trip to NASA Ames Research Center

NASA Ames, Mountain View, CA
October 24, 2014
17 participants

Our members had the opportunity to visit NASA Ames research center. We spent a total of five hours on the campus; touring the wind tunnel facilities and labs, the NASA Supercomputing Facility and had a meet and greet with NASA scientists and engineers. Dr. David Blake's (the lead developer of the CheMin instrument) gave us a tour of his lab. Afterwards we went to Amarin Thai Cuisine for dinner and a reception with three NASA scientists.
Bay Area Science Festival 2014 - Discovery Days

AT&T Park, San Francisco, CA
November 1, 2014
10,000s of participants

As in past years, we participated in the Bay Area Scicence Festival (BASF) Discovery Days at AT&T Park. We brought a variety of fun, hands-on optics demonstrations, including our laser harp, materials illustrating the concept of polarization, birefringence, the theory behind rainbows, and waveguiding of light by water stream. Our presence at the event had a large public exposure, reaching an audience of up to 30,000 people, many of whom children. As in recent years, the organizers of the BASF were very successful at attracting Bay Area families from all socioeconomic backgrounds which extended our reach to parts of the Bay Area community that are often underrepresented at other events. More information about the BASF can be found at http://www.bayareascience.org/.
Navigating Optics Coursework at Stanford

Stanford University
Stanford, CA
November 19, 2014
25 participants

In order to empower junior graduate students to take the most advantage of optical courses offered across all departments, we hosted a panel on Navigating Optics Coursework at Stanford, which was attended by around 25 students. The panelists were three students and two postdocs from the Departments of Applied Physics and Electrical Engineering, who had taken over 20 different optics related courses and are pursuing various directions in their research.
The Speaker Committee organizes a variety of technical talks for the optics community. Most seminars are held on campus in the Science and Engineering Quad. We try to invite speakers from a mix of academia, industry, and national labs.

For talk summaries and a list of future seminars, please see our website at http://photons.stanford.edu/seminars.

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Speaker</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>Friday, Feb 7</td>
<td>Prof. Andrea Alu (University of Texas at Austin)</td>
<td>Metamaterials and Plasmonics to Tailor and Enhance Wave-Matter Interactions</td>
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<tr>
<td>Monday, Feb 10</td>
<td>Prof. Chris Davis (University of Maryland)</td>
<td>Informal talk with students</td>
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<tr>
<td>Monday, Feb 10</td>
<td>Prof. Chris Davis (University of Maryland)</td>
<td>The Effects of the Atmosphere on Light and on Propagating Laser Beams</td>
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<tr>
<td>Wednesday, Feb 19</td>
<td>Prof. Joerg Bewersdorf (Yale University)</td>
<td>Advances in Optical Nanoscopy of Living Cells</td>
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<tr>
<td>Monday, Feb 24</td>
<td>Prof. Holger Schmidt (UC Santa Cruz)</td>
<td>Optofluidics: The Photonic Integration of Non-Solid Media</td>
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<tr>
<td>Monday, Mar 3</td>
<td>Prof. Bahram Jalali (UCLA)</td>
<td>Anamorphic Stretch Transform; Analog and Digital Compression of Big Data</td>
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<tr>
<td>Monday, Mar 10</td>
<td>Dr. Charles Santori (HP Labs)</td>
<td>Integrated Optics for Computing and Sensing</td>
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<tr>
<td>Thursday, March 13</td>
<td>Dr. Paul Juodawalkis (MIT Lincoln Lab)</td>
<td>Slab-Coupled Optical Waveguide (SCOW) Devices and Their Applications</td>
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<tr>
<td>Date</td>
<td>Speakers</td>
<td>Topic</td>
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<td>Thursday, Mar 27</td>
<td>Donn Silberman &amp; Jeff Gabriel (Physik Instrumente)</td>
<td>Micro and nano positioning for microscopy and research systems</td>
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<td>Thursday, May 15</td>
<td>Peter Kozodoy Glint Photonics, Inc.</td>
<td>Microscale Liquid Manipulation for Solar Concentrators</td>
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<tr>
<td>Thursday, May 29</td>
<td>Anna Wang &amp; Rick Sebastian (Newport)</td>
<td>Optical Specifications Basics, Design, Testing and Use of mirror mounts</td>
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<tr>
<td>Friday, June 13</td>
<td>Chris Phillips ETH Zurich</td>
<td>Mid-infrared optical parametric chirped pulse amplification via engineered quasi-phase-matching devices</td>
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<tr>
<td>Thursday, Oct 30</td>
<td>Laura Waller UC Berkeley Dept of EECS</td>
<td>Computational illumination for high-resolution 3D phase microscopy</td>
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<td>Wednesday, November 5</td>
<td>Eric Montgomery University of Maryland, ECE</td>
<td>Photocathodes for Free Electron Lasers</td>
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<td>Thursday, January 8, 2015</td>
<td>H. Volkan Demir Bilkent University, Turkey &amp; Nanyang Technical University, Singapore</td>
<td>Nanocrystal Quantum Dots - Physics and Optoelectronic Applications</td>
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<tr>
<td>Wednesday, January 21, 2015</td>
<td>John Denniston Kleiner-Perkins CB</td>
<td>Cleantech investing</td>
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## Finances

### Chapter Expenses
- Board meeting coffee: $-19.95

### Membership Events
- Summer BBQ: $-408.83
- Recruitment Breakfast: $-181.49
- California Academy of Sciences Nightlife: $-165.25
- Quals Mixer: $-24.98
- Happy Hours: $-374.67
- NASA Ames Visit and Networking Dinner: $-745.43
- Pizza Party: $-296.43
- Welcome BBQ: $-312.52
- Audio speakers for social events: $-125.00

### Outreach
- Maker Faire: $-834.57
- Laser Maze parts: $-10.22
- Bay Area Science Festival: $-24.51
- SPLASH: $-179.95
- Grant Writing Workshop: $-150.89
- Laser Khet game: $-32.05

### Seminars
- $-491.65

### Career Panel
- $-56.35

### Deposits
- SPIE Grants: $1,300
- OSA Grants: $1,000
- School of Engineering: $2,500

### Starting balance: $5797.92
### Net expenses: $-4434.74
### Net inflow: $4800.00

### Ending balance: $6163.18
### Member roster

<table>
<thead>
<tr>
<th>Name</th>
<th>Expires</th>
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<tbody>
<tr>
<td>Christy Amwake</td>
<td>9 February 2015</td>
</tr>
<tr>
<td>Sercan Arik</td>
<td>21 January 2016</td>
</tr>
<tr>
<td>Arushi Arora</td>
<td>10 February 2016</td>
</tr>
<tr>
<td>Sid Assawaworrarit</td>
<td>22 January 2016</td>
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<tr>
<td>Xuan Cao</td>
<td>27 December 2015</td>
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<tr>
<td>Andrew Ceballos</td>
<td>20 May 2016</td>
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<tr>
<td>Julie Chang</td>
<td>22 January 2016</td>
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<tr>
<td>Robert Chen</td>
<td>1 March 2015</td>
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<td>Sage Doshay</td>
<td>6 October 2015</td>
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<td>Kirk Ingold</td>
<td>14 October 2015</td>
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<td>Cathy Jan</td>
<td>14 August 2015</td>
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<tr>
<td>Isaac Kauvar</td>
<td>21 February 2015</td>
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<tr>
<td>Yousif Kelaita</td>
<td>21 February 2015</td>
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<tr>
<td>Sandra Kjono</td>
<td>4 February 2016</td>
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<tr>
<td>Gary Lee</td>
<td>19 January 2016</td>
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<tr>
<td>Maurice Lee</td>
<td>13 February 2015</td>
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<td>Matthew Lew</td>
<td>4 December 2015</td>
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<tr>
<td>Orly Liba</td>
<td>13 December 2015</td>
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<td>Qian Lin</td>
<td>13 February 2015</td>
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<tr>
<td>Kristen Lurie</td>
<td>13 January 2016</td>
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<td>Tahereh Marvdashti</td>
<td>16 February 2015</td>
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<td>Sonya Mollinger</td>
<td>17 February 2015</td>
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<td>Therice Morris</td>
<td>11 February 2016</td>
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<td>Michael Pieroni</td>
<td>5 December 2015</td>
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<td>Jessica Piper</td>
<td>4 January 2016</td>
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<td>Marina Radulaski</td>
<td>2 February 2015</td>
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<td>Christopher Rogers</td>
<td>13 February 2015</td>
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<tr>
<td>Hardeep Sanghera</td>
<td>12 February 2015</td>
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<tr>
<td>Andrew Scheuermann</td>
<td>8 February 2015</td>
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Alumni Member Roster

<table>
<thead>
<tr>
<th>Name</th>
<th>Graduation Date</th>
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<tbody>
<tr>
<td>Dirk Englund</td>
<td>(not available)</td>
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<tr>
<td>Peter Catrysse</td>
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<tr>
<td>Jonathan Liu</td>
<td>(not available)</td>
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<tr>
<td>Michelle Povinelli</td>
<td>(not available)</td>
</tr>
<tr>
<td>Hatice Altug</td>
<td>Jan 2010</td>
</tr>
<tr>
<td>Yang Wang</td>
<td>Sep 2007</td>
</tr>
<tr>
<td>Jan Bogdanski</td>
<td>Apr 2009</td>
</tr>
<tr>
<td>Andrei Faraon</td>
<td>Sep 2009</td>
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<tr>
<td>Paulina Kuo</td>
<td>Sep 2008</td>
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<td>Linyong Pang</td>
<td>Jun 2000</td>
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<tr>
<td>Yannis Paulus</td>
<td>Jun 2009</td>
</tr>
<tr>
<td>Zongfu Yu</td>
<td>Sep 2009</td>
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</tbody>
</table>
Young Chul Jun    Jan 2011
Matthew Terrel    May 2011
Mohammad Hendijanifard    Dec 2010
Thomas O'Sullivan    Jan 2011
Christopher Sramek    Jun 2010
Sarah Bohndiek    Aug 2013
Jie Li    Aug 2006
Jason Pelc    Jun 2012
Lieven Verslegers    Jan 2012
Tianhua Xu    Jun 2012
Charles Rudy    Sep 2013
Adam Wang    Apr 2012
Salil Soman    Sep 2020