

**Proposal for the 2025 IEEE Magnetics Society Summer School** (8 pages maximum)

|                    |   |
|--------------------|---|
| Proposed dates     | Sunday, (day) ~ Friday, (day) / (month)                                       |
| Principal proposer | Eric Fullerton and Vitaliy Lomakin  |
| Venue              | Center for Memory and Recording Research, University of California, San Diego |

**1. Summer School Proposal**

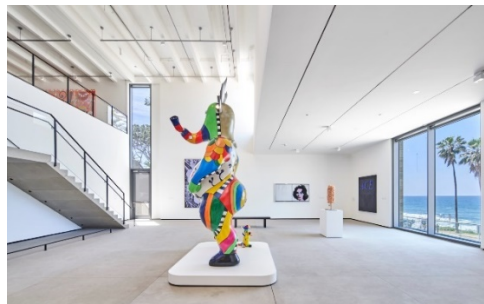
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| <p><b>(a) Research activities in magnetics of the hosting institution</b></p> <p>The University of California San Diego (UCSD) is a world-renowned research institution with a strong focus on magnetism and related fields. The Center for Memory and Recording Research (CMRR) at UCSD is at the forefront of magnetic research, with several key areas of focus:</p> <ol style="list-style-type: none"><li>1. Spintronics and magnetic materials</li><li>2. Magnetic recording technologies</li><li>3. Neuromorphic computing using magnetic devices</li><li>4. Quantum materials for energy-efficient computing</li></ol> <p>CMRR was established at UC San Diego in 1983 to advance the state-of-the-art in information storage technology and to produce highly trained graduate students and postdoctoral professionals for the data storage industry. Pursuing a dynamic, interdisciplinary program of cutting-edge research defined in cooperation with government agencies and industry partners, the Center's faculty, researchers, and students continue to push the frontiers of scientific knowledge and engineering technology to meet society's ever-increasing need for high-performance, reliable, and secure information storage systems.</p> <p>The Center's strong connection to industry ensures that research remains relevant and applicable to real-world challenges in data storage and magnetic technologies. This industry collaboration also provides students with valuable exposure to practical applications and potential career opportunities.</p> <p>UCSD is also home to the DOE Energy Frontier Research Center on Quantum Materials for Energy Efficient Neuromorphic Computing (Q-MEEN-C), coordinated by UCSD faculty Ivan Schuller. This center brings together researchers from multiple institutions to explore the intersection of quantum materials and neuromorphic computing.</p> <p>The proposed summer school will leverage the expertise of UCSD faculty and researchers, providing students with exposure to cutting-edge research in magnetism and its applications.</p> |
| <p><b>(b) Historical and cultural attractiveness of the site</b></p>   |

La Jolla, where UCSD is located, is a picturesque coastal community known for its beautiful beaches, world-class research institutions, and vibrant cultural scene. Some key attractions include:

- La Jolla Cove and Torrey Pines State Natural Reserve: Scenic beaches popular for swimming, snorkeling, and observing local marine life. They offer hiking trails with stunning ocean views and unique geological formations.



- Museum of Contemporary Art San Diego: Features rotating exhibitions of contemporary art.



San Diego, just a short drive from La Jolla, offers additional cultural and historical attractions:

- Balboa Park: Home to numerous museums and gardens



- San Diego Zoo and Safari Park: One of the largest and most famous zoos in the world, known for its conservation efforts and diverse animal collection. Safari Park:

Located in Escondido, this expansive wildlife sanctuary offers unique safari-like experiences and conservation programs.



- SeaWorld San Diego is a marine theme park featuring animal shows, aquariums, and thrill rides, while also conducting marine wildlife research and rescue operations.



- Old Town San Diego: A historic district showcasing early California history.



- USS Midway Museum: A maritime museum aboard a historic aircraft carrier.



- Cabrillo National Monument: Commemorates the landing of Juan Rodríguez Cabrillo in 1542, offering panoramic views of the city and bay.



#### (c) Previous experience of hosting international events (especially on magnetism)

UCSD and CMRR have extensive experience hosting international conferences and workshops. Both co-Chairs (Eric Fullerton and Vitaliy Lomakin) have served on organization committees of multiple conferences and events. Some notable events include:

1. Biannual CMRR Research Reviews: These events bring together researchers and industry partners to discuss the latest developments in magnetic recording and memory technologies.
2. IEEE Magnetic Frontiers conferences: UCSD faculty have been involved in organizing these specialized conferences, including a proposal for the 2025 edition focused on materials and phenomena for spin-based neuromorphic computing.
3. Various workshops and symposia related to the Q-MEEN-C center, bringing together researchers from around the world to discuss quantum materials and neuromorphic computing.
4. Spintronics IX in 2016
5. 13th Joint MMM-Intermag Conference in 2016
6. The Magnetism Recording Conference in 2010
7. Advanced Micromagnetic Workshop in 2012

8. IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting in 2017

**(d) Accessibility (including a map, airport(s) and local transportation)**

UCSD is easily accessible via air and ground transportation:

1. San Diego International Airport (SAN): Located approximately 15 miles from UCSD, offering domestic and international flights.
2. Los Angeles International Airport (LAX): A larger international hub, about 120 miles north of San Diego, with shuttle services available to San Diego.

Local transportation options include:

1. Public buses: The San Diego Metropolitan Transit System serves the UCSD campus and surrounding areas.
2. Ride-sharing services: Uber, Lyft, and traditional taxi services are readily available.
3. UCSD shuttle services: The university operates free shuttle services around campus and to nearby areas.

**(e) Facilities, housing and meals (including some photos of lecture theatre, etc.)**

UCSD offers excellent facilities for hosting the summer school:

1. Lecture venues: CMRR has an auditorium that can accommodate up to 100 participants, which is perfect for our expected attendance of 90 students and 10 presenters.
2. Poster session areas: CMRR has several meeting rooms suitable for poster presentations.
3. Audiovisual equipment: State-of-the-art AV systems are available in lecture halls and meeting rooms.
4. Internet access: High-speed Wi-Fi is available throughout the campus.

Housing options include:

1. On-campus dormitories: Available during the summer months, offering affordable accommodation for students.
2. Nearby hotels: Several hotels in La Jolla and surrounding areas offer accommodation at various price points.

Meals:

1. On-campus dining facilities: UCSD has multiple dining halls and cafeterias.
2. Catering services: Available for coffee breaks, lunches, and special events.
3. Local restaurants: La Jolla and the surrounding area offer a wide range of dining options for participants to explore during free time.

**(f) Proposed timetable**

Table 1: Proposed timetable (please modify as appropriate).

| Date<br>Time | Sun.<br>(date)    | Mon.<br>(date)   | Tue.<br>(date)   | Wed.<br>(date)                                   | Thu.<br>(date)   | Fri.<br>(date)  |
|--------------|-------------------|------------------|------------------|--|------------------|-----------------|
| 8:00-9:00    |                   | Breakfast        | Breakfast        | Breakfast  | Breakfast        | Breakfast       |
| 9:00-10:30   |                   | Lecture 1        | Lecture 5        | Lecture 9  | Lecture 13       | Lecture 17      |
| 10:30-11:00  |                   | Break            | Break            | Break  | Break            | Break           |
| 11:00-12:30  |                   | Lecture 2        | Lecture 6        | Lecture 10                                       | Lecture 14       | Lecture 18      |
| 12:30-14:00  |                   | Lunch            | Lunch            | Lunch  | Lunch            | Lunch           |
| 14:00-15:30  |                   | Lecture 3        | Lecture 7        | Excursion<br>Excursion<br>Excursion<br>Excursion | Lecture 15       | Lecture 19      |
| 15:30-16:00  |                   | Break            | Break            |  | Break            | Break           |
| 16:00-17:30  |                   | Lecture 4        | Lecture 8        |  | Lecture 16       | Closing Remarks |
| 17:30-19:00  | Welcome Reception | Poster Session 1 | Poster Session 2 |  | Poster Session 3 | Farewell Dinner |
|              |                   | Dinner           | Dinner           | Dinner   | Dinner           |                 |

**(g) Excursion or cultural activity**

We propose an excursion on Friday, June XXX, to showcase the natural beauty and cultural attractions of the San Diego area. The excursion will include a choice of activities:

1. Morning visit to Torrey Pines State Natural Reserve for a guided hike and overview of the unique coastal ecosystem.
2. Kayaking adventure in La Jolla Cove, exploring sea caves and observing local marine life.

**(h) Local Organizing Committee (including brief track records)**

Chairs: Eric Fullerton and Vitaliy Lomakin  
 Program Support (Lectures): Vitaliy Lomakin  
 Program Support (Posters): Alex Frano  
 Accommodation: Marina Robenko  
 Cultural Events: Vitaliy Lomakin  
 Student Support: Vitaliy Lomakin



1. Prof. Eric Fullerton (UCSD) - Co-Chair
  - Director of CMRR
  - Expertise: Nanomagnetism, spintronics, magnetic thin films and multilayers
2. Prof. Vitaliy Lomakin (UCSD) - Co-Chair
  - Chair of the IEEE San Diego Magnetism Chapter, Assoc. Director of CMRR
  - Expertise: Computational magnetism and electromagnetism, spintronics, magnetic recording
3. Prof. Ivan Schuller (UCSD)
  - Expertise: Condensed matter physics, nanostructured materials
4. Prof. Oleg Shpyrko (UCSD)
  - Chair of the Department of Physics, UCSD
  - Expertise: Nanoscale x-ray imaging, nanostructured materials
5. Prof. Alex Frano (UCSD)
  - Expertise: Condensed matter physics, nanostructured materials
6. Prof. Javier Garay (UCSD)
  - Vice Dean of Research at the School of Engineering, UCSD
  - Expertise: Advanced Material Processing and Synthesis

## 2. Budget

Table 2: Detailed budget for participants.

|   | <i>Unit price</i> | <i>Unit</i>     | <i>No.</i> | <i>Total in local currency</i> | <i>Total in USD (\$)</i> |
|---|-------------------|-----------------|------------|--------------------------------|--------------------------|
| Travel support for students                           |                   |                 |            |                                |                          |
| Flight (Asia)   | \$1200            | per person      | 25         | \$30,000                       |                          |
| Flight (Europe)                                       | \$1200            | per person      | 25         | \$25,000                       |                          |
| Flight (North America)                                | \$500             | per person      | 30         | \$15,000                       |                          |
| Flight (Others)                                       | \$1000            | per person      | 10         | \$10,000                       |                          |
| Lodging and meals for 90 students (on campus housing) | \$115             | per day person  | 450        | \$51,750                       |                          |
| Lodging and meals for lecturers (on campus housing)   | \$185             | per day person  | 50         | \$8,750                        |                          |
| Coffee breaks   | \$10              | per slot person | 400        | \$4,000                        |                          |
| Welcome Reception                                     | \$20              | per person      | 100        | \$2,000                        |                          |
| Banquet   | \$75              | per person      | 100        | \$7,500                        |                          |
| Excursion   |                   |                 |            |                                |                          |
| Activities and transportation                         | \$100             | per person      | 100        | \$10,000                       |                          |
| Total   |                   |                 |            | \$                             |                          |
| IEEE Mag Soc contribution                             |                   |                 |            | \$167,000                      |                          |
|   |                   |                 |            |                                |                          |
|   |                   |                 |            |                                |                          |
|   |                   |                 |            |                                |                          |
|   |                   |                 |            |                                |                          |
|   |                   |                 |            |                                |                          |

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| Additional support needed  | \$ |
| <b>(b) Sources of additional support if the total budget is larger than US \$100,000</b>   |    |
| <p>Sources of additional support if the total budget is larger than US \$100,000</p> <p>To cover the additional \$67,000 needed beyond the IEEE Magnetics Society contribution, we propose the following sources of support:</p> <ol style="list-style-type: none"> <li>1. UCSD College of Engineering: \$20,000</li> <li>2. CMRR industrial partners: \$25,000</li> <li>3. Local IEEE Chapter: \$5,000</li> <li>4. National Science Foundation (NSF) grant (to be submitted): \$20,000</li> </ol> |    |
| <b>(c) Any additional remarks</b>  |    |
| <ol style="list-style-type: none"> <li>1. We provide opportunities for virtual participation or recorded sessions to extend the reach of the summer school beyond in-person attendees.</li> <li>2. The local organizing committee will work closely with UCSD's conference services to ensure smooth logistics and cost-effective solutions for accommodations and meals.</li> </ol>   |    |

Attach a support letter from the local chapter, which is not count for the page limit.