

# Directed Energy Professional Society

2024 May DEPS Annual Report

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DEPS Fellow

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# Directed Energy Professional Society

- Celebrating 25 years of fostering research, development & operational transition of Directed Energy technology for national defense and civil applications through professional communication, collaboration, education, and outreach

## **Our Goals:**

- Foster communication within the DE community
- Enhance DE education through research grants & internships
- Recognize outstanding DE contributions through our Fellows Program
- Publish and archive DE achievements (Journal of Directed Energy)
- **Enable DE outreach through Professional Conferences and Symposia**

**Empower DE Community with unbiased, accurate and reliable information enabling informed decisions and fostering collaboration**



# DEPS Strategic Objectives

- **Restore Fiscal Stability**
  - Achieved!
- **Increase membership** (Current membership at 1242 members)
  - Increase in our younger population
    - Continue to support and develop next generation of scientists and engineers
  - Increase in gender & ethnic diversity
  - Increase in our military membership
    - Becomes more important as we start to field Directed Energy weapons
- **Educational outreach efforts**
  - Community event participation
    - Dallas TX, Central New Mexico, and Franklin County PA Science Fairs
    - Virginia Piedmont Regional Science Fair (new activity in 2023)
  - Volunteer opportunities & student STEM awards still available
  - Contact Cristina Crowson ([cristina@deps.org](mailto:cristina@deps.org)) to volunteer



# Annual Achievements

- Awarded \$190K of graduate research grants
  - 24 Awardees – 16 different Universities – 4 Women / 20 Men
    - Both \$10k and \$5k awards
  - Thanks to JDETO and ONR for their support
  - Both AFRL/RD and NSWC/DD have actively recruited from DEPS pool of students
- Successful conferences in 2023 and 2024
  - Classified & Limited Distribution venues sets DEPS apart from other professional societies and commercial conferences
  - Record attendance at each event! (552 @ S&T; 661 @ Systems)



# DEPS Financial Status

## Cash on Hand

- Mar 2023
- Mar 2024

## Operating Funds

\$261,240  
\$390,265

## Reserves

\$375,600  
\$444,259

## 2023 Budget

- Income-Yr End 2023
- Expenses-Yr End 2023

est \$1,849,000  
est \$1,823,250

act \$2,219,226  
act \$2,085,512

## DEPS Scholarship Fund March 2024

\$99,234

goal \$500,000

## Independent Audits

- 2022 Audit completed, no significant findings
- 2023 Audit Completed , no findings

**DEPS has not had to dip into our Reserve Funds**



# DEPS Scholarship Fund

- Five-year plan to create a \$500k scholarship endowment
  - That would fund two named scholarships annually, in perpetuity (\$10k/award)
  - Expect a 4.5% annual withdrawal, consistent with standard endowment practices
  - Five-year gifting program also consistent with standard endowment practices
  - Board has approved one named scholarship for Dr. Sam Blankenship
    - 1<sup>st</sup> DEPS Executive Director (2001-2012)
  - JDETO has approved one named scholarship for Dr. Jack Slater (named for 2020-2024)
    - JTO Technical Advisor (2001-2018)



# DEPS Grants from ONR and JDETO

INCOME	(\$ k)	% of Income
FY22		
ONR	\$75.50	3.90%
JDETO	\$310.40	16.20%
DEPS TOTAL	\$1,914.10	20.10%
FY23		
ONR	\$78.90	3.60%
JDETO	\$364.10	16.40%
DEPS TOTAL	\$2,219.20	20%
FY24 Plan		
ONR	\$82.50	3.30%
JDETO	\$410.00	16.50%
TOTAL	\$2,484.50	19.80%

- Under the ONR grant since 2019, DEPS has administered 31 awards to graduate students pursuing Ph.D.'s in S&E.
- Under the JDETO grant since 2019, DEPS has administered 61 awards.
- 46 awardees are still in school and 41 are known to have accepted positions in DE areas at the Army, Navy, & Air Force research organizations, other national laboratories, or with industry partners
- **Meaning 94%** of scholars over past five years who have graduated after receiving funding from JDETO or ONR have transitioned into the DE workforce.



# Examples of DEPS Scholars

- 2004 Dr. John Harris (AFRL) & Dr. Brad Hoff (AFRL)
- 2005/06/07 Dr. Brad Hoff (AFRL) & Dr. DJ Wittich (AFRL)
- 2010/11/12 Dr. Mark Spencer (JDETO)
- 2013/14/15 Dr. Conor Pogue (NIWC, 13 only) & Dr. Mike Steinbock (AFRL)
- 2015/16/17 Dr. Matt Kemnetz (AFRL) & Dr. Cameron Pouncey (NSWC Dahlgren)
- 2019/20/21 Dr. Ryan Yamaguchi (NPS)





# Other DEPS Initiatives

- Summer Internships
  - Students apply each year for twenty-five positions
  - One hundred twelve internships have been funded in past five years
  - One third of interns became involved in DE workforce
- DEPS proposes to expand direct student programs
  - Funding senior projects in undergraduate schools
  - Selected projects will be funded at \$2,500 annually
  - Need Mentors from Industry and Government in DE in addition to professor
  - Emphasis in on education, not original research
- DEPS will continue to develop and offer a broad range of continuing education short courses and publications to facilitate student awareness of DE



# DEPS Classes Offered at 2024 Annual S&T

## Morning Courses

[Introduction to HEL Systems](#) (Dist A)

[Introduction to HPM Systems](#) (Dist A)

[Introduction to Beam Control](#) (Dist A)

[DE Systems Engineering](#) (Dist A)  
[Full-Day Course](#)

[Atmospheric Laser Propagation](#) (Dist C)

## Afternoon Courses

[Optics and Coatings for HEL Systems](#) (Dist A)

[HPM Weapons and their Effects](#) (Dist C)

[Laser Weapon System Thermal Management](#) (Dist D)

[DE Bio-Effects](#) (Dist C)

[DE Warfighter 101](#) (Dist A)



# DEPS Publications

❖ The following papers are awaiting publication in the next standard issue, *Open Volume of the Journal of Directed Energy*.

- Set Lasers To...Communicate: Behavioral Modeling of a Maritime Over-The-Horizon Communication Concept
- RF Ionization Breakdown due to Standing Wave Enhancement on HPM Phased Array
- A Study of Space-Based Solar Power Systems for Military
- An Investigation of High Energy Laser-Material Interactions Using Finite Element and Analytic Modeling
- DANTE Pulsed Power Progress: Magnetic Pulse Compression for High-PRF, Short-Pulse HPM Weapon Systems
- USMC Application of High Energy Laser Weapons to Counter Drone Threats



# FY21-24 DE Appropriations

	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>
US Army	\$446M	\$395M	\$797M	\$426.6M
US Navy	\$236M	\$165M	\$132M	\$173.6M
US Air Force/Space Force	\$214M	\$231M	\$304M	\$322.8M
OSD/JDETO	\$157M	\$150M	\$211M	\$183.9M
DARPA+SOCOM+TRMC+MDA	\$105M	\$150M	\$201M	\$229.7M
<b>Total DE Budget</b>	<b>\$1158M</b>	<b>\$1091M</b>	<b>\$1645M</b>	<b>\$1330M</b>



# DEPS Board Members

## • Current Board

- Adam Aberle, Army RCCTO
- Chris Behre, Navy DEWO
- Stephanie Miller, AFRL Brooks
- Iain McKinnie, Raytheon Systems
- Craig Robin, EO Solutions
- Larry Grimes, AFRL Kirtland
- Martin Hubbard, UK DSTL

## Exiting Board Members

Dr David Stoudt, BAH  
Dr John Hartke, USMA

## New Board Members

Joe Grobmyer, Army SMDC  
Paul Shattuck, LMCO

## Returning Board Member

Jeff Maloney, ManTech

# DEPS Officers

## Elected by the Board of Directors



### *New Officers*

**President**

**Paul Shattuck**

**Vice President**

**Christopher Behre**

**Secretary**

**Michael O'Connor**

**Treasurer**

**Jeff Maloney**

**BSEA Liaison**

**Lawrence Grimes**



# DEPS 2024 Events

- DEPS Annual Science & Technology Symposium
  - JDETO Annual Review in conjunction with DEPS S&T event
  - 20-24 May 2024, Colorado Springs
- DE Educational Workshop
  - 21-23 May 2024, Colorado Springs
- UK/US DE Workshop
  - 22-26 July 2024, Swindon, UK
- DEPS Systems Symposium
  - 18-22 November 2024, Monterey, CA
- DEPS/ITEA Joint Conference
  - 2-7 February 2025, Albuquerque, NM



# Support of DEPS

- ❑ The DEPS Board of Directors encourages Society members to:
  - ✓ Step up their support for the technology, outreach, education, and growth of the Society
  - ✓ Exemplify themselves as leaders in the DE field

**Support to DEPS is a central concept for the characteristics that favor induction to the level of DEPS Fellow**



# Thank you to our Sponsors & Exhibitors



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