

**Attachment 1**  
**Solicitation Number N00014-17-S-B008 for Electronic Warfare Technology**

**Listing of Prior and Current ONR 31 EW Technology Efforts**

<b>APERTURES</b>						
<b>RF Antennas</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Antennas from VHF to THz	FY08	FY10	Univ Colorado	Prof. Dejan Filipovic	dejan@colorado.edu	303-735-6319
Integrated mmW DF Subsystems & Dual-Polarized Antennas	FY11	FY13	Univ Colorado	Prof. Dejan Filipovic	dejan@colorado.edu	303-735-6319
Submarine Buoyant Cable Meta-dielectric Antennas for EW	FY11	FY13	NUWC	Dr. David Tonn	david.tonn@navy.mil	401-832-5481
1-110 GHz Two Aperture ESA for Electronic Attack	FY12	FY14	Harris Corp	Dr. Sean Ortiz	sean.ortiz@harris.com	321-729-2865
Multifunctional Arrays and Frequency Independent Antennas (MAFIA)	FY10	FY13	Univ Colorado	Prof Dejan Filipovic	dejan@colorado.edu	303-735-6319
Conformal Direction Finding Antenna System	FY10	FY13	First RF	Mr. Steve Dawson	sdawson@firstrf.com	303-449-5211 x226
Electrically-Small Antennas for Super-Resolving DF and Hi-Power EA at HF/VHF	FY15	FY18	Univ Wisconsin	Prof. Nader Behdad	behdad@wisc.edu	608-262-8804
<b>Aperture Isolation</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Isolation Improve Between Multiple Aperture EA/ES	FY12	FY14	MIT-LL	Dr. Bradley Perry	bperry@ll.mit.edu	781-981-0861
Simultaneous Transmit and Receive (STAR) for Look-Through Electronic Attack	FY11	FY15	MIT-LL	Dr. Bradley Perry	bperry@ll.mit.edu	781-981-0861
CIA - Circulator In Aperture	FY15	FY18	Univ Colorado	Prof. Dejan Filipovic	dejan@colorado.edu	303-735-6319
Modular, Adaptive, and Multi-function RF Front-end	FY12	FY15	MITRE	Mr. Marcus Glenn	glenn@mitre.org	703-983-5803
Signal Processing Electronic Attack RFIC (SPEAR)	FY15	FY18	NRL 5730/UCB	Mr. Joel Goodman	joel.goodman@nrl.navy.mil	202-404-2984
<b>EO/IR Beam Steering</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Multispectral Optical Phased Array Beam Steering	FY13	FY15	Univ Calif Davis	Dr. Ben Yoo	yoo@ece.ucdavis.edu	530-752-7063
Multiband Optical Phased Array Beam Former	FY13	FY16	HRL Laboratories	Dr. Kevin Geary	kgeary@hrl.com	310-317-5271
Liquid Crystal for Non-Mechanical Beam Steering	FY13	FY15	NRL 6930	Dr. Christopher Spillmann	christopher.spillman@nrl.navy.mil	202-767-0477
Low-Absorption Liquid Crystals for Infrared Beam Steering	FY13	FY15	Univ Central Florida	Prof. Shin-Tson Wu	swu@mail.ucf.edu	407-823-4763
Refractive Non-Mechanical Beam Steering in the Midwave and Longwave Infrared	FY16	FY18	NRL 6930	Dr. Christopher Spillmann	christopher.spillman@nrl.navy.mil	202-767-0477
<b>ES SYSTEMS</b>						
<b>Wideband RF Receivers</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Cueing Receiver for Faster EA Response Management	FY08	FY10	Naval Postgrad School	Prof. Philip Pace	pepace@nps.edu	831-656-3286
Miniature 2-70 GHz Integrated Optical Channelizer	FY08	FY11	Northrop Grumman	Dr. Akis Goutzoulis	a.goutzoulis@ngc.com	410-765-7976
Wideband Photonic Cueing Receiver for ES	FY12	FY14	JHU/APL	Dr. Thomas Clark	thomas.clark@jhuapl.edu	240-228-5185
1-110 GHz Photonic Cueing Receiver	FY12	FY15	Northrop Grumman	Dr. Akis Goutzoulis	a.goutzoulis@ngc.com	410-765-7976
Extreme Wideband Spatial Spectral Holographic Signal Processor [ONR SBIR Ph 2.5]	FY13	FY14	S2 Corporation	Dr. Kris Merkel	merkel@s2corporation.com	406-922-0334
Full Spectrum Staring ES Receiver with Instantaneous DF	FY15	FY18	BAE/S2/HRL/UCB/NRL	Mr. Steve Hedges	steve.a.hedges@baesystems.com	603-885-2375
Wideband, High-Dynamic Range, Software Programmable Receiver & Vector Spectrum/Signal Analyzer in a USB Dongle Form-Factor	FY10	FY13	Univ Southern Calif	Prof. Hossein Hashemi	hosseinh@usc.edu	213-740-3596
High Dynamic Range Receiver	FY11	FY13	HRL Laboratories	Mr. Ara Kurdoghlian	ara@hrl.com	310-317-5404
<b>ES Components</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Wideband GaN EW Support Receiver Components	FY12	FY15	HRL Laboratories	Mr. Ara Kurdoghlian	ara@hrl.com	310-317-5404
Miniature Broadband Tunable Filters for EW Receivers	FY12	FY15	BAE/NRL 6851	Mr. Thomas Johnson Dr. Andrew Guyette	thomas1.johnson@baesystems.com andrew.guyette@nrl.navy.mil	603-885-6149 202-404-4606
Next Gen EW Components Based on Graphene	FY12	FY15	Penn St./NSWC Crane	Dr. Joshua Robinson Dr. Charles Pagel	jrobinson@eoc.psu.edu chuck.pagel@navy.mil	814-867-1560 812-854-2382
<b>EO/IR Sensing</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Rapid Threat Detection & ID using Multi-band, High-Res LADAR	FY11	FY14	Bridger Photonics	Dr. Peter Roos	roos@bridgerphotonics.com	406-585-2774
High Performance Solar-Blind FPAs for Next Gen MWS	FY12	FY15	MP Technologies	Dr. Ryan McClintock	rmcclin@gmail.com	847-467-4093
Extremely Sensitive Solid State UV Photodetector	FY12	FY14	Univ Nebraska	Prof. Jinsong Huang	jhuang2@unl.edu	402-472-2640
<b>PROCESSING</b>						

<b>ES Processing</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Non-Traditional Signal Exploitation using Photonic Processing	FY08	FY11	Montana State Univ	Dr. Randall Babbitt	babbitt@physics.montana.edu	406-994-6156
Real-Time EA Effectiveness Monitoring	FY09	FY12	NRL 5760	Dr. Josh Beun	josh.beun@nrl.navy.mil	202-404-3803
WB Low Power Cognitive Signal Processing IC	FY12	FY15	HRL Laboratories	Dr. Peter Petre	petre@hrl.com	123-317-5919
Wideband RF Processing - Net-Positive Parametric Mixers	FY12	FY15	UC-SD/SPAWAR	Dr. Stojan Radic Mr. Bill Jacobs	sradic@ucsd.edu bill.jacobs@navy.mil	858-534-4344 619-553-1614
Spatial-Spectral Holographic Rainbow Spectrometer	FY13	FY14	Montana State Univ	Dr. Randall Babbitt	babbitt@physics.montana.edu	406-994-6156
CS-based Extremely Wideband Spectral Awareness (EWSA)	FY11	FY13	Gird Systems	Mr. James Caffery Jr.	jcaffery@girdsystems.com	513-281-2900 x103
Broadband Electronic Warfare Effectiveness in Real-time (BEWEAR)	FY16	FY16	NRL 5730 CERDEC I2WD AFRL/RWWE	Dr. Crystal Acosta Andre Aklian Capt Don Gruber	crystal.acosta@nrl.navy.mil andre.j.aklian.civ@mail.mil donald.gruber@us.af.mil	202-404-3313 443-861-1402 937-713-4020
Passive Detection Capability for Existing Information Operation Systems	FY16	FY17	SSC-Pacific 56140	Nick Johnson	nicholas.t.johnson@navy.mil	619-553-2119
<b>ES Techniques</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Digital Directional Correlator	FY08	FY10	Northrop Grumman	Dr. Maury Marks	maury.marks@ngc.com	410-765-2952
Direction Finding of LPI Emitters	FY09	FY12	NRL 5722	Mr. Joseph Frankovich	joseph.frankovich@nrl.navy.mil	202-404-7632
Cooperative Monolithic Distributed Sensors for EW	FY11	FY14	Univ Southern Calif	Prof. Hossein Hashemi	hosseinh@usc.edu	213-740-3596
PerSElve: SEI & Geo-Location in Complex EM Environment	FY11	FY13	Michigan Aero	Dr. David Johnson	djohnson@michaero.com	734-975-8777 x140
pDESIST: pseudo-Doppler-Enabled Synthesis Imaging	FY11	FY14	Leidos (formerly SAIC)	Dr. John Kendra	john.r.kendra@leidos.com	703-676-1648
Electronic Attack Adaptive-Detector Sidecar	FY11	FY14	MIT-LL	Dr. W. Gregory Lyons	lyons@ll.mit.edu	781-981-4705
Signature Detection Based on Nonlinearity	FY14	FY17	NRL 6362	Dr. Thomas Carroll	thomas.carroll@nrl.navy.mil	202-767-6242
Multi-Platform Passive Localization of RF Emissions	FY16	FY18	NRL 5720	Dr. Ted Roberts	ted.roberts@nrl.navy.mil	202-767-3139
Cognitive Architecture for Cooperative Electronic-Warfare	FY14	FY16	NRL 5722	Dr. Eric Justh	eric.justh@nrl.navy.mil	202-404-7638
Cognitive Radio Network Identification, Association, and Attack	FY14	FY16	NRL 5734	Dr. Crystal Acosta	crystal.acosta@nrl.navy.mil	202-404-3313
Heterogeneous Parallel Mobile Computing for Cognitive EW	FY14	FY16	Virginia Tech	Dr. T. Charles Clancy	tcc@vt.edu	571-858-3350
Spectrum Knowledge Framework	FY14	FY16	JHU/APL	Mr. Robert Normoyle	Robert.Normoyle@jhuapl.edu	240-228-5010
Communicating Spectrum Knowledge Through A Signal Descriptor Language	FY14	FY16	NRL 5772	Dr. David Chichka	david.chichka@nrl.navy.mil	202-404-6826
<b>EA Processing</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Concurrent Multi-Spectral RF Carrier Generator	FY09	FY12	Univ Southern Calif	Prof. Hossein Hashemi	hosseinh@usc.edu	213-740-3596
Si-based Monolithic DRFM	FY12	FY15	Univ Southern Calif	Prof. Hossein Hashemi	hosseinh@usc.edu	213-740-3596
Wideband Intelligent Signal Estimator (WISER) DRFM	FY12	FY14	NRL 5732	Mr. T. Christopher Moss	tmoss@nrl.navy.mil	202-767-2660
Next-Generation EW Processor	FY12	FY13	MIT-LL	Dr. W. Gregory Lyons	lyons@ll.mit.edu	781-981-4705
<b>EA Techniques</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Integrated On-board / Off-board EA Effectiveness	FY09	FY12	NRL 5743	Mr. Anwar Khan	anwar.khan@nrl.navy.mil	202-404-3733
Passive Coherent Location Denial	FY11	FY13	NRL 5730	Mr. Christian Hochuli	christian.hochuli@nrl.navy.mil	202-767-3025
Countering LTE and DSA Enhanced LTE Communications	FY10	FY12	Shared Spectrum Co.	Dr. Mark McHenry	mmchenry@sharespectrum.com	703-462-6943
Countering Advanced Threats in Complex RF Environments with Cognitive Techniques	FY13	FY15	Echo Ridge	Mr. John Carlson	john.carlson@echoridgenet.com	703-348-3167
Coherent Network-Centric Spectrum Attack	FY14	FY17	NAWC Pt. Mugu	Mr. Mike Garcia	michael.r.garcia@navy.mil	805-989-4651
EA Swarming Technologies for Counter Anti-Access, Area Denial Applications	FY16	FY18	NRL 5700	Dr. Jeff Heyer	jeff.heyer@nrl.navy.mil	202-404-2538
<b>EA SYSTEMS</b>						
<b>RF/mmW Transmitters</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Compact 25-80 kW ERP Decoy Tx w/ Continuous 18-45 GHz Freq Coverage	FY12	FY14	NRL 6800	Dr. Baruch Levush	baruch.levush@nrl.navy.mil	202-767-3693
A Digital Transmitter on Chip	FY12	FY14	NRL/MIT-LL	Mr. Joel Goodman Dr. Jim Vian	joel.goodman@nrl.navy.mil vian@ll.mit.edu	202-404-2984 781-981-3217

Monolithic Software Programmable Wideband Transmitter and Multi-Input Multi-Output Transceiver	FY12	FY15	Univ Southern Calif	Prof. Hossein Hashemi	hosseinh@usc.edu	213-740-3596
mmW Embarkable Prototype System (MEPS) Demonstrator	FY15	FY18	NRL 6850	Dr. John Pasour	john.pasour@nrl.navy.mil	202-404-4975
High-power Electronic Attack Transmitter	FY15	FY19	HRL Laboratories	Mr. Ara Kurdoghlian	ara@hrl.com	310-317-5404
18-45 GHz Decoy for Defense against mmW Guided Anti-Ship Missiles	FY15	FY17	NRL 5713	Dr. Gary Roan	gary.roan@nrl.navy.mil	202-767-6191
<b>EA Components</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
PolyStrata Time Delay Unit	FY12	FY15	Nuvotronics	Mr. Steve Huettner	shuettner@nuvotronics.com	800-341-2333 x127
Enabling Technology for High Power mmW on Small Platforms	FY12	FY15	Univ of Colorado	Prof. Dejan Filipovic	dejan@colorado.edu	303-735-6319
Multiplexer and Tunable Filters for Channelized Transmitter Architecture	FY10	FY13	NRL 6851	Dr. Andrew Guyette	andrew.guyette@nrl.navy.mil	202-404-4606
mmW EW System Subsystem Demonstration	FY15	FY17	CNA	Dr. Chuck Heider	heiderc@cna.org	703-824-2967
Multi-Configurable Filters for Wideband Receivers and Transmitters	FY11	FY15	NRL 6851	Dr. Andrew Guyette	andrew.guyette@nrl.navy.mil	202-404-4606
Common Dual-Band Power Module	FY16	FY16	NRL 5713	Dr. Gary Roan	gary.roan@nrl.navy.mil	202-767-6191
<b>EO/IR Transmitters</b>	<b>FY Start</b>	<b>FY End</b>	<b>Organization</b>	<b>PI</b>	<b>EMAIL</b>	<b>PHONE</b>
Multi-Wavelength Laser with Broad Spectral Coverage	FY10	FY13	Daylight Solutions	Dr. Timothy Day	tday@daylightsolutions.com	858-391-1010
High-Power LWIR QC Lasers for Shipboard IRCM	FY10	FY13	AdTech	Dr. Mariano Troccoli	mariano.troccoli@atoptics.com	626-956-1000
High Power Multispectral Laser on Hybrid Silicon Chip	FY13	FY15	NRL 5613	Dr. Jerry Meyer	jerry.meyer@nrl.navy.mil	202-767-3276
High Brightness Monolithic Multispectral SC Lasers	FY13	FY16	Tera Diode	Dr. Robin Huang	robin@teradiode.com	978-988-1040 x102
Novel Multispectral Fiber Laser Architecture	FY13	FY16	Q-Peak	Dr. Kevin Wall	kwall@qpeak.com	781-275-9535 x601
Frequency Agile Fiber Laser w/ GaN Frequency Conversion	FY13	FY15	NRL 5624	Dr. Steven Bowman	steven.bowman@nrl.navy.mil	202-767-9418
Multi-Spectral High-Power MWIR Laser on a Hybrid Silicon Chip	FY16	FY18	NRL 5613	Dr. Jerry Meyer	jerry.meyer@nrl.navy.mil	202-767-3276
Optical Chipset for Array Processing	FY15	FY17	NRL5650	Dr. Keith Williams	keith.williams@nrl.navy.mil	202-767-9360
2D Broad Area Superlattice for Ultra-High Power, High-Brightness CW MWIR Emitters	FY16	FY18	Univ of Central Florida	Prof. Arkadiy Lyakh	Arkadiy.Lyakh@ucf.edu	407-823-0699