

# NCCHPS

Northern California Chapter-Health Physics Society

November 2018



## *NCCHPS November 2018 Meeting*

*With Pre-Meeting Tour of Stanford Linear Accelerator Laboratory*

Thursday, November 15, 2018

Dinner Venue - Michael's at Shoreline, Mountain View

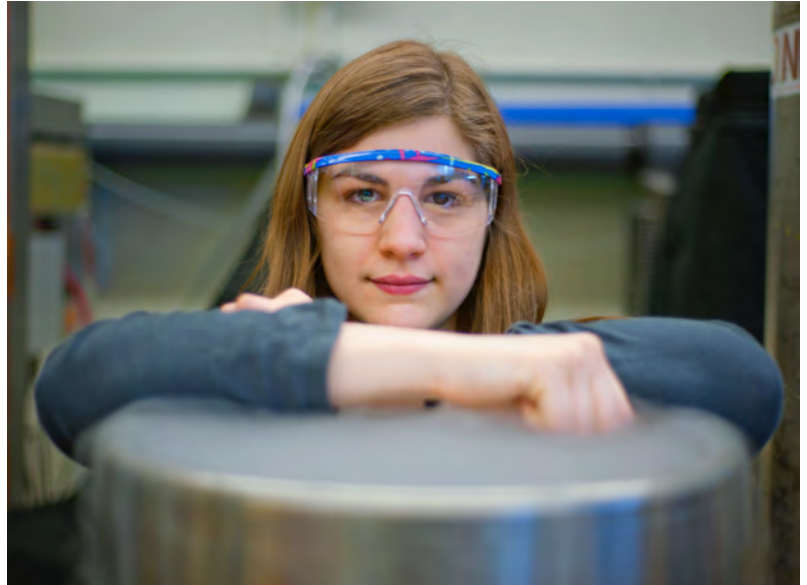


### **Dark Matter Direct Detection with the LUX-ZEPLIN Experiment**

LUX-ZEPLIN (LZ) will be a 10 ton liquid xenon Time Projection Chamber (TPC) searching for dark matter particles via direct scattering from xenon nuclei. In order to achieve the desired sensitivity to these interactions, we require an extremely radiopure environment, aiming for less than 1 mBq of total radioactivity within the detector. Most of our backgrounds originate outside of the bulk xenon and are mitigated by xenon's self-shielding properties and our techniques for precision event position reconstruction and vetos. A distinct challenge, however, are background sources that are dissolved throughout the xenon, such as Kr-85 and Rn-222. This talk will present an overview of particle detection in LZ and describe our systems for xenon purification and mitigation of radioactive backgrounds.

## About the Speaker

Christina Ignarra is a Postdoctoral Research Associate at SLAC National Accelerator Laboratory. She received her PhD from MIT in 2014 on the MiniBooNE and MicroBooNE neutrino oscillation experiments. Her PhD work focused on sterile neutrino searches and optimizing light detection in liquid argon Time Projection Chambers (TPCs). Her postdoctoral work is with the LUX and LZ dark matter direct detection experiments, switching focus from detecting one weakly interacting particle to another. Her current projects include a chromatography system for removing Kr-85 from high purity xenon and conducting high voltage testing of grids for the LZ liquid xenon TPC. Her analysis focus is on characterizing non-standard nuclear responses that dark matter particles may undergo in detectors.



## Tour of Stanford Linear Accelerator Laboratory 3 pm, Thursday, November 15, 2018

Please pre-register by contacting Marcus Balanky at [mbalanky@slac.stanford.edu](mailto:mbalanky@slac.stanford.edu), by Thursday, November 1.

Board members Marcus Balanky and Ted Liang will offer a small group tour at SLAC in association with our evening technical meeting at Mountain View. The tour begins at 3 PM and lasts approximately 90 minutes.

Significant particle physics and cosmology projects are ongoing at SLAC. The tour will include a SLAC historical short film, Near Experimental Hall (NEH), Far Hall (FEH), LSST camera, LZ Dark Matter, Vista of SSRL and End Stations A & B.

Besides getting to see what's going on at SLAC, the Board is requesting an additional CEC point from the AAHP and BLS to encourage those attending to maintain certification.

## ***2019 Annual Meeting – Orlando, Florida***



### **2019 HPS Annual Meeting: In the Heart of "Where It's Happening"**

*Howard Dickson from hps.org*

Greetings to all Health Physics Society (HPS) members and other interested parties. Planning for the next HPS annual meeting is well underway. The Local Arrangements Committee (LAC) for the 2019 annual meeting held its organizational meeting in St. Petersburg on 21 September.

Most of you already know that the [2019 HPS Annual Meeting](#) will be held in Orlando, Florida, 7–11 July, with the Hilton Orlando as the headquarters hotel. We will be located right in the heart of "where it's happening" on Destination Parkway just off International Drive. That means we will be close to a number of features and events rated highly by tourists. Think Sea World, Universal Orlando, Walt Disney World, iDrive 360, and many more.

The LAC is planning several surprises and innovations to supplement the traditionally favorite meeting features. The goal is to make the Orlando meeting the best annual meeting we have had, and we believe that goal is achievable. After all we are only getting prepared to host the best International Radiation Protection Association Congress ever in Orlando in 2024.





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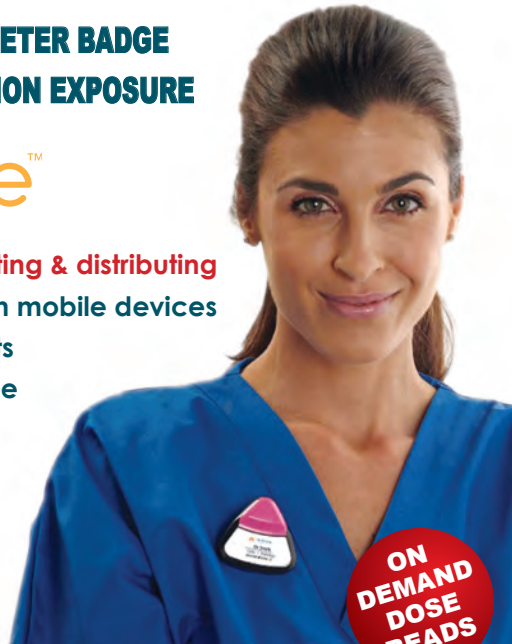
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From the Editor

Warren TenBrook, CHP

## Low-Dose Radiation Research Act of 2018

The US congressional website reports on the Low-Dose Radiation Research Act of 2018: "This bill requires the Department of Energy to carry out a research program on low-dose radiation to enhance the scientific understanding of the effects of exposure and to improve risk-assessment and risk-management methods.

"Low-dose radiation" is defined as a dose less than 100 millisieverts. (The Nuclear Regulatory Commission limits an adult's annual occupational radiation dose to 50 millisieverts.)"

The national Society encourages passage of this bill to further our knowledge of low-dose radiation response; however, this bill is not without controversy, as many major news organizations have also publicized aligned proposals at the EPA and the senate testimony of Dr. Edward J. Calabrese, Professor, University of Massachusetts At Amherst School of Public Health Sciences. Dr. Calabrese, a toxicologist, is a strong proponent of radiation hormesis and has been quoted by the EPA in press releases.

Chapter members are encouraged to understand these important administrative and legislative developments. The Editor agrees that research in low-dose response, one of the "last frontiers" of health physics, deserves careful consideration. We also need to be cautious that lawmakers respect the scientific consensus arising from radiation research and not proceed based on preconceptions or political agendas. As matters stand today, BEIR VII 2006 states "...The available epidemiologic data were broadly supportive of the LNT model and that at this time no alternative dose-response relationship appears more pragmatic or prudent for radiation protection purposes..."

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<p><i>Upcoming NCCHPS Meetings...</i></p> <p><b>November 15, 2018</b></p> <p><b>January 17, 2019</b></p> <p><b>March 21, 2019</b> <b>HPS President Elect</b></p> <p><b>May 16, 2019</b> <b>Affiliates Night</b></p> <p><b>Mailing Address:</b> NCCHPS 4435 First Street #141 Livermore, CA 94550</p> <p><b>Email:</b> <a href="mailto:ncchps@gmail.com">ncchps@gmail.com</a></p> <p><b>Website:</b> <a href="http://hpschapters.org/ncchps/">http://hpschapters.org/ncchps/</a></p> <p><b>Newsletter Editor:</b> Warren TenBrook <a href="mailto:warren@tenbrook.org">warren@tenbrook.org</a> (925) 423-1470</p> <p><b>Affiliate Liason:</b> Nelson Chiu <a href="mailto:ncchpsaffiliatecontact@gmail.com">ncchpsaffiliatecontact@gmail.com</a> (414) 559-5586</p>	<p><b><u>The Next NCCHPS Meeting!</u></b> Thursday, November 15, 2018 <b>Note Earlier Hours for this Meeting:</b> Tour of SLAC 3 pm Social Hour with appetizers 5:30 pm Dinner 6:30 pm Technical Presentation 7:30 pm</p> <p>Michael's At Shoreline 2960 Shoreline Boulevard Mountain View, CA 94043</p> <p>Appetizers during social hour: -Michael's Crab Cake with Mustard Dill Sauce -Vegetable Spring Roll, Spicy Mustard</p> <p>Dinner Menu: -Salad, Moroccan Bean, Spinach with Mushroom and Egg, Pasta Primavera, Caesar Salad. -Pot Roast old fashion style -Breast of Chicken Marsala -Served with Rice, Roasted Potatoes, Seasonal Vegetables -Dessert, Sorbet.</p> <p><b>Register by Sunday, November 11, 2018 at the link below:</b> <a href="http://hpschapters.org/ncchps/docs/pages/meetings.html">http://hpschapters.org/ncchps/docs/pages/meetings.html</a></p> <p>NCCHPS members \$30 (\$35 @ door) NCCHPS guests \$35 Students \$10 Non-members \$40</p> <p><b>Only online registrations accepted.</b></p> <p>Contact Member-at-Large Heather Byrnes ONLY if you encounter difficulties using the form: <a href="mailto:byrnes7@llnl.gov">byrnes7@llnl.gov</a></p> <p>Please note that in order to avoid unnecessary costs to the Chapter, you may be charged for no-shows. Cancellations may not be made after the RSVP deadline.</p>	<p><b><u>2018-2019 NCCHPS Board Members:</u></b></p> <p><b>President-Elect</b> Marcus Balanky CHP, CLSO SLAC <a href="mailto:mbalanky@slac.stanford.edu">mbalanky@slac.stanford.edu</a></p> <p><b>President</b> Maranda Cimeno Genentech, Inc. <a href="mailto:cimeno.maranda@gene.com">cimeno.maranda@gene.com</a></p> <p><b>Past President</b> Ibrahim Ozcan LBNL <a href="mailto:iozcan@lbl.gov">iozcan@lbl.gov</a></p> <p><b>Secretary</b> Dan Hibbing UC Berkeley <a href="mailto:dhibbing@berkeley.edu">dhibbing@berkeley.edu</a></p> <p><b>Treasurer</b> Taiee Ted Liang SLAC <a href="mailto:tliang6@slac.stanford.edu">tliang6@slac.stanford.edu</a></p> <p><b>Member-at-Large</b> Heather Byrnes LLNL <a href="mailto:heather.sue.marie@gmail.com">heather.sue.marie@gmail.com</a></p> <p><b>Member-at-Large</b> Jesse Hendricks UC, Berkeley <a href="mailto:jesse.hendricks@gmail.com">jesse.hendricks@gmail.com</a></p>
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