Trinity Section
American Nuclear Society
P. O. Box 5367, Albuquerque, NM 87185-5367
http://local.ans.org/trinity/

DINNER MEETING ANNOUNCEMENT

"pRad - A New Way to See Inside of Exploding Things"

Speaker: **Christopher Morris, PhD**, Threat Reduction Team, Subatomic Physics Group, Physics Division, :LANL

Abstract: please see next page.

Biography: Christopher Morris received a B.S. degree from Lehigh University and a Ph.D. in physics from the University of Virginia. In addition to developing a variety of radiographic techniques at Los Alamos-using neutrons, protons, electrons and muons, Morris has had a career as a medium-energy nuclear physicist and is currently measuring neutron beta decay using a new ultra-cold neutron source at Los Alamos. He is a co-author of over 450 refereed journal papers and has given over 200 invited talks. He is a fellow of the American Physical Society and is a Los Alamos Laboratory Fellow.

Place: **Courtyard by Marriott, Santa Fe**
3347 Cerrillos Road, Santa Fe, NM (505-473-2800)

Directions: From Albuquerque, take I-25 North approximately 55 miles to Exit 278 (Cerrillos Road). Hotel is 3 miles from the exit on the left-hand side of Cerrillos Road at Richards Avenue.

Date: **September 11, 2015**

Time: **6:00** Social Hour with Cash Bar
7:00 Buffet Dinner (with roasted lemon chicken breast and beef tips)
7:45 Speaker

Cost: *$35 per person (pre-paid by web sign-up in advance);*
$40 per person (not pre-paid, at the door);
$15 for students and children

We strongly encourage you to sign up and pay for this event by 7 Sep using the ANS Trinity PayPal payment account. Visit the "Calendar" page of our web site (http://local.ans.org/trinity/calendar.html) and select the appropriate payment button. You may use any credit card and do NOT need to have your own PayPal account to make the payment.

RSVP: If you do not use on-line payment, please RSVP no later than 7 Sep to:
Markku Koskelo: mkoskelo@aquilagroup.com (505-338-8083) or
Kimberly Klain: kclark@lanl.gov (505-665-1349)

RSVP must be received by 7 Sep in order to give final numbers to the caterers. While we strongly encourage everyone to use on-line payment to sign up and prepay, an RSVP is a commitment to attend/pay at the door. We cannot afford "no shows" after the final count is given to the caterers, as the Section is partially subsidizing the cost of this event. If you cancel after 7 Sep, you will still be responsible for paying.

"pRad - A New Way to See Inside of Exploding Things"

Christopher Morris, PhD
Threat Reduction Team, Subatomic Physics Group, Physics Division
Los Alamos National Laboratory, Los Alamos, NM 87545

Abstract

One hundred and 18 years ago Wilhelm Conrad Roentgen discovered X rays and invented radiography, which allowed him to peer into opaque objects such as his wife's hand. This resulted in a famous X ray of Anna Bertha Roentgen's skeleton and wedding ring. This discovery lead to Roentgen winning the first Nobel prize in 1901, and launched the field of nuclear physics. A new way to peer into opaque objects, proton radiography (pRad), has been invented and developed at Los Alamos National Laboratory, which uses high-energy protons for radiography. PRad allows much more detailed information to be obtained from experiments performed with high explosives than was ever available in the past. Since the first demonstration of the focusing of protons for radiography in 1995, huge progress has been made in developing techniques for dynamic imaging that has made proton radiography an important contributor to the study weapons physics in both the US and Russia. In a more recent development, the same techniques are being applied to use the scattering of cosmic ray muons for port security, possibly radiography of the Fukushima reactor cores, and for arms treaty verification. Dr. Morris will discuss the history of the development of these techniques and show some exciting recent results (see the figure).

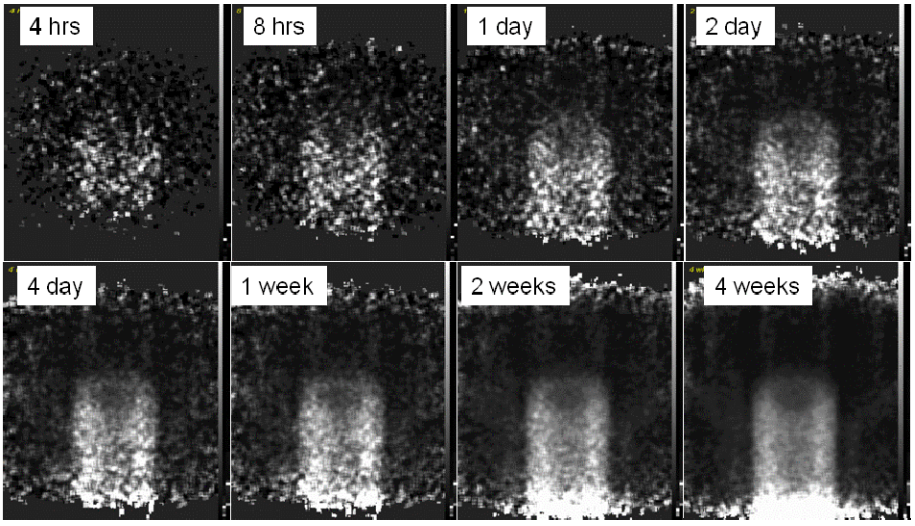

Figure 1). Time development of the radiographic signal for the Nuclear Critical Assembly reactor at Toshiba in Kawasaki, Japan.