SEDAT GOLUOGLU

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Nuclear Science and Technology Division
Oak Ridge National Laboratory

EDUCATION

UNIVERSITY OF TENNESSEE, Knoxville, TN
Ph.D., Nuclear Engineering, Nuclear Criticality Safety, August 1997

UNIVERSITY OF TENNESSEE, Knoxville, TN
M.S., Nuclear Engineering, Nuclear Criticality Safety, August 1994

HACETTEPE UNIVERSITY, Ankara, TURKEY
M.S., Nuclear Engineering, Nuclear Criticality Safety, February 1993

HACETTEPE UNIVERSITY, Ankara, TURKEY
B.S., Nuclear Engineering, May 1989

EXPERIENCE

6/2000 – present **OAK RIDGE NATIONAL LABORATORY**, Oak Ridge, TN
Sr. Research and Development Staff

Areas of expertise and interest include nuclear criticality safety analyses and methods development, nuclear data processing methods and tools, reactor physics methods development, sensitivity and uncertainty analyses and methods development, methods and code development for static and time-dependent neutron transport, and radiation shielding. Extensive and in-depth experience with broad spectrum of development and analysis activities. Extensive experience coordinating with other senior and junior staff members and/or performing various tasks for multi-year high-visibility and high-impact projects such as development of continuous energy cross sections and transport codes for criticality safety, shielding and depletion analyses. Extensive experience mentoring masters and doctorate students. Examples of major activities and responsibilities include:

- Responsible code manager for various components of SCALE such as Material Information Processor, Continuous Energy KENO, Criticality Safety Analysis Sequence CSAS5, and optimization sequence SMORES.
- Responsible for generating continuous energy neutron cross section libraries for SCALE code system using the state-of-the-art tools in AMPX system. Responsibilities include development and improvement of the codes used to generate the libraries as well as validation and testing for generating high-quality cross section libraries.
- Responsible for methods and capability development for generating continuous energy gamma cross sections and subsequent development of analysis capability in SCALE radiation transport codes.
- Lead Instructor of KENO V.a and KENO-VI Monte Carlo Criticality Safety code training courses. Lead/contributing instructor of short SCALE training courses.
- Criticality Safety Track Leader for PHYSOR 2010 conference.

- Developer of SMORES Sequence for establishing bounding limits by determining the optimum material configurations.
- Mentored many summer interns, which provided invaluable experience in guidance, leadership, and management skills.
- Some of the past analysis experience include:
    - Performed criticality safety analysis for determining the safety basis for certification of Project Maximus LEU Type A drums.
    - Performed calculations to determine potential payload increases in the TRUPACT-II and HALFPACT systems that are used for transporting transuranic nuclear waste from various DOE sites to the WIPP. This study received a citation from DOE NNSA.
    - Performed calculations and analyses in support of DOT 9975 container for $^{237}NpO_2$ storage, handling and transport.
    - Improved and further developed the space-time kinetics code TDKENO to perform moderator intrusion consequence analysis.
    - Performed analyses to assess relevance and importance of available and needed integral benchmarks and differential data evaluations impacting potential MOX production throughput determinations relative to low-moderated MOX fuel blending operations.
    - Performed sensitivity and uncertainty analyses of nuclear systems for cross section and code validation. Developed an improved methodology and new related parameters to be used in assessing the area of applicability of benchmarks and the related bias for validation of cross sections and criticality safety code KENO-V.a. Also developed a methodology for determining the penalty that should be added to the safety margin due to insufficient benchmarks.
    - Performed shielding calculations for a 21-PWR waste package involving use of cermet and graphite as shielding materials.
    - Performed criticality calculations of MOX fuel assemblies for transport and storage.
    - Contributed to International Handbook of Evaluated Criticality Safety Benchmark Experiments by evaluating experiments that were performed with arrays of uranyl nitrate cans at ORCEF between 1966 and 1968.
- Additional responsibilities include identification of methods and data deficiencies for novel applications, and subsequently development of the enhancements necessary to rectify the deficiencies.

10/1997 – 6/2000 **FRAMATOME COGEMA FUELS**, Las Vegas, NV
Nuclear Engineer

- Provided criticality safety and shielding expertise in the application of the disposal criticality analysis methodology to designated DOE fuel forms that are slated for disposal at the Yucca Mountain such as FFTF, Shippingport-PWR, Fermi Reactor, N-Reactor, Triga, etc.

- As lead analyst, coordinated or performed the criticality and shielding, analyses and coordinated the structural, thermal and geochemistry analyses for selected DOE EM fuels.
- Performed validation of MCNP for criticality and shielding analyses of waste packages designed for storage at Yucca Mountain.

1/1992 – 10/1997 **UNIVERSITY OF TENNESSEE, NUCLEAR ENGINEERING DEPARTMENT,** Knoxville, TN

6/1997 – 10/1997 *Post-Doctorate*

- Involved in the development of a time-dependent Monte Carlo neutron transport code with thermal-hydraulic feedback (TDKENO).

1/1992 – 6/1997 *Graduate Research Assistant*

- Developed the kinetics computer code TDTORT (available through RSICC) based on time-dependent 3-d transport theory to perform analyses of criticality safety excursions, coolant voiding situations in power reactors, and small high leakage reactors such as space reactors.
- Improved neutronics calculations of the High Flux Isotope Reactor as part of MS thesis by creating more accurate problem-dependent cross section libraries.
- Performed code and cross-section verification and validation studies for criticality and shielding applications.

3/1992 – 12/1993 **OAK RIDGE NATIONAL LABORATORY, HIGH FLUX ISOTOPE REACTOR**, Reactor Technology Section, Research Reactors Division, Oak Ridge, TN

Intern

- Improved earlier methods to analyze the reactor power distributions using the SCALE code system and VENTURE neutronics code.
- Assisted in analyses of foil activation experiments.

ACHIEVEMENTS AND ACTIVITIES

- Treasurer, American Nuclear Society (ANS) Nuclear Criticality Safety Division (NCSD) (2010-2011)
- ANSI/ANS-8.1 working group member (2010-2011)
- ANS NCSD Executive Board Member (2006-2009).
- Chair, ANS NCSD Education Committee (2006-2010).
- ANS Oak Ridge/Knoxville Local Section Executive Board Member (2003-2006).
- PHYSOR 2006 (September 2006), organizer of a session on HTR Numerical Benchmarks and Studies.
- ORNL Nuclear Science and Technology Division, Operations and Support Award, April 2006, for organizing the ANS Nuclear Criticality Safety

Division 2005 Topical Meeting held in Knoxville on September 18-22, 2005.

- Assistant General Chair, Nuclear Criticality Safety Division 2005 Topical Meeting.
- ORNL Nuclear Science and Technology Division, Scientific and Technical Award, November 2004, for development and application of new sensitivity/uncertainty analysis capability for the DOE Nuclear Criticality Safety Program.
- National Nuclear Security Administration Certificate of Appreciation for demonstrating the opportunity for significant increases in fissile mass limits with corresponding benefit to the transuranic waste disposition program (April 2002).
- ANS Local Sections Committee Member (2000-2003).
- Successfully completed Nuclear Criticality Safety Short Course at the University of New Mexico (July 1998).
- ANS University of Tennessee student chapter graduate student representative (1994).
- ANS National Student Design Competition (Graduate Division); Project entitled "Analysis of Shielding Concerns for Spent Fuel in the Advanced Neutron Source Reactor"; selected first place winner at the ANS Meeting in San Francisco (November 1993).
- ANS Member. Session organizer and chair for various sessions.
- Worked extensively with SUN, IBM, DEC Alpha, HP UNIX, and Linux workstations, and PC's.
- Excellent knowledge of FORTRAN, working knowledge of BASIC.
- Involved in first stage calculations of WIMS Library Update Project organized by International Atomic Energy Agency.
- Participated and completed the workshop on Reactor Physics Calculations for Applications in Nuclear Technology held at International Center for Theoretical Physics, Trieste, Italy (1990).

PUBLICATIONS Numerous publications in journals, conference proceedings or transactions, OCRWM reports, or ORNL reports as primary author or co-author.