Prepare. Protect. Respond.

We help prepare for extreme events. We protect entire built infrastructures, as well as humans, from extreme events such as blasts from terrorist attacks and mining explosions, car crashes, sports collisions, and natural disasters including earthquakes and landslides. After an extreme event, we provide rapid damage and vulnerability assessments.

At the Center for Extreme Events Research, we have world-renowned expertise in both experimental and computational investigation methods. We leverage this expertise to develop the assessment tools and experiments our research partners need to prepare, protect and respond.

Join us.

Our Competitive Advantages

WORLD’S BEST TESTING FACILITIES
Blast / extreme-events simulator | Gas gun and impact testing facilities | Large-scale soil box seismic testing

UNRIVALED COMPUTATIONAL EXPERTISE
Advanced finite elements | meshfree methods | Isogeometric analysis
Our software systems empower research partners to solve otherwise intractable simulation challenges.

WE COMBINE EXPERIMENTAL AND COMPUTATIONAL TECHNOLOGIES
We validate large-scale computational simulations using our unparalleled testing facilities. Validated computational capabilities can be fully integrated to provide fast damage assessment of structures in recovery efforts.

Membership Opportunities

Access to multidisciplinary innovation through workshops, short courses, visiting-scholar opportunities for research staff, and one-on-one collaborations.

Student recruiting: access to the most promising students. Connect with emerging technical talent.

Gain insight into the future of the field.
WHO WE ARE and WHAT WE DO

Buildings. Bridges. Power plants. Cars. Human bodies. When it comes to extreme events, both natural and human caused, we prepare, protect and assess these structures, and many more.

**STRUCTURAL ENGINEERING**

*Robert Asaro*
Composite design and manufacturing technologies for large scale structures and marine applications. Deformation, fracture and fatigue of high temperature intermetallics.

*Yuri Bazilevs*
Design of robust and efficient computational methods for large scale, high performance computing.

*David Benson*
Computational mechanics and computer methods for solving problems in mechanical engineering.

*Jiun-Shyan (J.S.) Chen*
Meshfree based computational techniques for damage assessment of solids and structures subjected to extreme loadings such as shocks, penetrations, blasts, landslides, as well as multiscale modeling of biomaterials.

*Patrick Fox*
Computational geotechnical and geoenvironmental engineering, including landslides, retaining walls, landfills, foundations, soil dynamics, and earthquake engineering.

*Gilbert Hegemier*
Hazard mitigation engineering using advanced materials and design to retrofit critical infrastructure systems and components.

*Hyonny Kim*
Impact effects on composite materials and structures with aerospace and other applications, multifunctional materials, nanomaterials, and adhesive bonding.

**MECHANICAL AND AEROSPACE ENGINEERING**

*Alison Marsden*
Computational fluid mechanics, cardiovascular mechanics, bio-fluid mechanics and biomedical devices technology emphasizing optimization methods relating to vascular surgery.

*Vitali Nesterenko*
New experimental capabilities for dynamic testing. Physics and mechanics of shock and high strain, strain rate deformation, instability and fragmentation of heterogeneous solid materials.

*Albert P. Pisano*
MEMS, manufacturing, wireless sensors for harsh environments, low-cost sensors.

*Sutanu Sarkar*
Computational fluid dynamics, turbulence, environmental flows.

**RADIOLOGY**

*Shantanu Sinha*
Medical physics, biomedical imaging and modeling of the musculoskeletal system under normal and diseased conditions.

**MATHMATICS**

*Randolph Bank*
Scientific computing, numerical partial differential equations.

*Li-Tien Cheng*
Scientific computing, image processing, level set methods, numerical partial differential equations.

*Michael Holst*
Scientific computing, numerical analysis, applied analysis, mathematical physics, partial differential equations.

**SAN DIEGO SUPERCOMPUTER CENTER (SDSC)**

*Amitava Majumdar*

*Mahidar Tatineni*

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**Short Courses**

We are developing short courses to provide our partners with focused, cutting-edge professional training in the topics that matter most, including:

- Experimental and Computational Investigation of Extreme Events
- Meshfree Methods
- Isogeometric Analysis