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California Polytechnic State University

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FOR IMMEDIATE RELEASE

Student-Designed Flexible Bolt Promises Advances in Construction, Seismic Safety

A team of Cal Poly mechanical engineering students has developed a flexible bolt that can connect parts of buildings and machines so the joints can "give" -- opening up a whole new range of possibilities in construction, machine design, robotics and seismic safety.

The students showed off prototypes of their invention at a March 14 exhibition of student innovations at the Smithsonian Institution's National Museum of American History in Washington, D.C. The "March Madness for the Mind" exhibit, sponsored by the National Collegiate Inventors and Innovators Alliance, is an annual event featuring student inventions from around the country.

Cal Poly's flexible bolt, which the team dubbed the Flexibolt, is made of a flexible core with threads that can rotate or slide relative to each other.

Among the Flexibolt's possible uses, team advisor and Mechanical Engineering Professor Saeed Niku points to its potential for attaching two parts with mismatched holes, parts whose surfaces aren't parallel, and parts that need to move in different directions -- in robotics, for example. In the area of earthquake engineering, flexible bolts would allow whole structures to flex so they could better withstand the jolt of a temblor.

The project began with an idea for a project in the Mechanical Engineering Department's "Philosophy of Design" course taught by Niku. In the class, student teams design and build prototypes for new products as if they were entrepreneurs out in the business world. After the first prototypes were made, the Flexibolt project received \$11,400 from the National Collegiate Inventors and Innovators Alliance and the Lemelson Foundation to develop and test more-detailed

prototypes.

Dean Mathis, a mechanical engineering graduate student from Los Osos, worked on the prototypes for a year. He and mechanical engineering senior Chris Kaminaga from Antelope demonstrated them at the Washington conference under the guidance of Niku.

Niku has filed a provisional patent application for the invention.

The Cal Poly team's creation was one of 19 displayed at this year's "March Madness for the Mind" exhibit. Others included a non-invasive screening probe for heart disease, a battery-heated jacket and a watch that prevents sunburn.

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