

[Current News](#)[CEAS Newsletter](#)

CEAS Current News

ASU Bioengineer Presents Evidence of Forecasting Epileptic Attacks



Imagine being able to predict when an epileptic attack may occur. Medicine could prevent or lessen the reaction; one would know when not to drive a car; a patient could know when to not board an airplane; the preventative steps are numerous.

According to evidence presented by Dr. Leon Iasemidis, Associate Professor of Bioengineering within the College of Engineering and Applied Sciences at Arizona State University, that is not only possible, but it has been done.

Iasemidis, in corroboration with Professor James Chris Sackellares, M. D. at the University of Florida, presented their findings at the annual convention of the American Association for the Advancement of Science, and they show that in five patients, epileptic seizures can be detected from 20 to 43 minutes in advance with the help of an electroencephalogram (EEG) signal.

According to Iasemidis, "Seizures can be detected by the EEG when brain shifts occur, as seizures are preceded by a gradual dynamic entrainment of widespread regions of both cerebral hemispheres." The research shows that the critical brain sites synchronize their rates of information transfer long before the seizure actually occurs. The studies identify characteristics of those changes in the brain in order to predict a seizure.

These findings could lead to diagnostic tools and treatments for epilepsy, as well as potential ability to pre-treat a seizure in order to minimize or completely pre-empt the attack. Iasemidis added, "This could also lead to other useful investigations into a wide variety of other complex, nonstationary and spatio-temporal systems undergoing phase transitions."

"We're delighted that Dr. Iasemidis has shown that it is possible to predict the onset of an attack," beamed Dr. Eric Guilbeau, Chair of the Department of Bioengineering. "The implications are very significant, and can have dramatic, positive impact on individuals affected with epilepsy."

Guilbeau added that Iasemidis' work is recognized worldwide. He was recently complimented on getting Iasemidis to come to ASU by a representative of Nicolet, Inc. which produces the EEG device. They recognize Iasemidis as the world leader in this epilepsy research.

Epileptic seizures are basically the transition of the brain from chaos to order, and back to chaos. Epilepsy affects approximately 1% of the population, and about 25% of those patients have seizures that are resistant to current medical therapy.