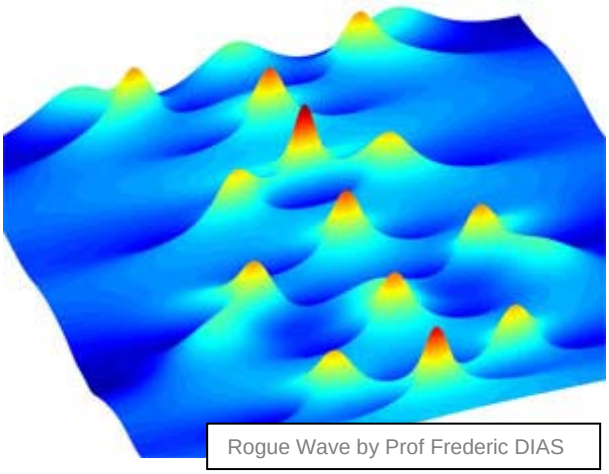
ERC Advanced Grant for Franche-Comté

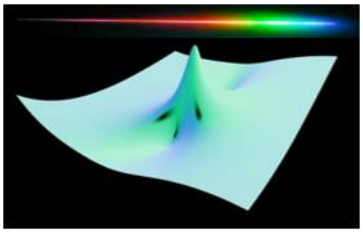
Professor John Dudley from the Institut FEMTO-ST (UMR 6174 CNRS-Université de Franche-Comté) and Professor Frederic Dias from University College Dublin (on leave from ENS Cachan) have received an Advanced Grant of 1.8 million euros from the European Research Council (ERC). Their project called MULTIWAVE will aim to unravel the mysteries behind freak waves in the ocean by looking at how such waves can also arise in optical systems.



Rogue Wave by Prof Frederic DIAS

ERC Advanced Grants fund cutting-edge research by only the very best research leaders in Europe. Projects funded by these competitive and selective grants must be highly ambitious and pioneering, employing unconventional methodologies and investigations with the possibility of a major breakthrough with far-reaching impact. The class of Advanced Grant awarded to Professors Dudley and Dias is particularly exceptional as it combines the expertise of two Co-Investigators from different domains to work on an extremely multi-disciplinary project. Only a very small number of ERC Advanced grants are funded in this way.

Freak or 'rogue' waves can arise rapidly in deep waters and are distinct from the more familiar tsunamis, which follow a disturbance of the seabed and tend to pose a threat to ports, shallower areas and shores. Rogue waves had long been reported by mariners and suspected in the loss of some vessels, but their existence was measured scientifically only in the 1990s. Today the origins of rogue waves still remain mysterious, but the MULTIWAVE project aims to use light waves to learn more about the deep ocean phenomenon. "The key originality of this project is that it combines applied mathematics, hydrodynamics and optics," says Prof. Dudley. "Waves in hydrodynamics and optics share some common physics such as dispersion and non-linearity, and the combination of these can lead to the formation of extreme events with many similar properties. Our aim is to determine exactly the conditions under which these extreme waves are generated." The investigators hope that findings from the four-year project will feed into better forecasting of freak waves at sea by identifying early-warning signatures linked to their occurrence.



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