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*Peakons: some simple questions with unexpected answers*

Peakons are peaked travelling waves which arise as solutions of the integrable Camassa-Holm equation in water wave theory discovered 30 years ago. In the explosion of work on peakons following that discovery, several basic questions have been asked about the nature of peakons —

What is the most general class of nonlinear dispersive wave equations possessing peakon solutions?

Is integrability necessary for existence of multi-peakon solutions?

Are peakons best understood as weak solutions or distributional solutions?

Does the NLS equation have a peakon counterpart?

How to find integrable peakon equations systematically?

In this talk, I will review some of my contributions to understanding and attempting to answer these questions over the past decade, which have led to some unexpected and on-going new developments.