The digital laser

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In this talk I will recap the steps towards creating the world’s first digital laser. The digital laser has a small LCD screen as one of the laser mirrors. This means that changing a picture on the screen immediately changes the properties of the light that comes out of the laser. This is a significant departure from the standard laser design where the output is fixed. To illustrate the paradigm shift required, we play a movie inside a laser for the first time, and observe a dynamically changing output beam. I will discuss what the future might hold for this new technology.

Andrew received his PhD (1998) from the University of Natal, and subsequently spent several years working as an applied laser physicist, first for the South African Atomic Energy Corporation and then later in a private laser company where he was Technical Director. He is presently Chief Researcher at the CSIR National Laser Centre and is the Research Group Leader of the Mathematical Optics group. Andrew sits on several international conference committees, Chairs SPIE’s international conference on Laser Beam Shaping and is Chair of the OSA’s Diffractive Optics and Holography technical group. He holds honorary Professorships three universities, serves on many national and international panels, has published over 150 technical papers, and is an active popularizer of science. His interests include laser beams and resonators, digital holography, orbital angular momentum and quantum optics.