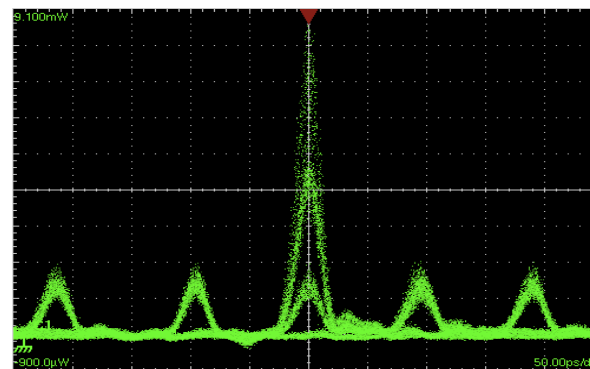




Experimental Investigation of Coherent and Incoherent Interferometric Noise in 2-D Optical CDMA Networks

Katherine Thompson, Y. Deng, M. P. Fok, and P. R. Prucnal
Department of Electrical Engineering, Princeton University

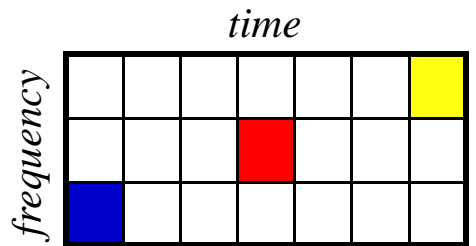
QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.



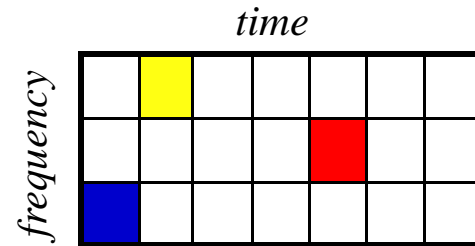


What is OCDMA?

- Optical Code Division Multiple Access is a particular technique used to divide the frequency and time spectrums into slots
- Various divisions allow multiple users of a network to have a unique code for transmitting their signal
- 2-D systems have the potential to accommodate many more users, each with an individual code



User 1 Transmitter Code



User 2 Transmitter Code

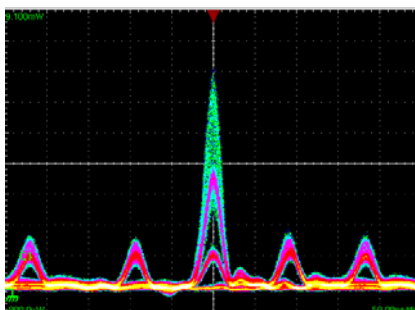
Two different codes using the same three wavelengths





The Problem: Interferometric Noise

- Interferometric noise occurs when signals from multiple users with similar wavelengths are aligned and received simultaneously
- Severely degrades the signal, even more than other types of noise found in OCDMA systems
- Has not been experimentally studied thoroughly, so our first experiment was to study the noise and characterize it
- Interferometric noise is an important problem that we need to solve in order to take advantage of this technique



**Signals
Aligned**

