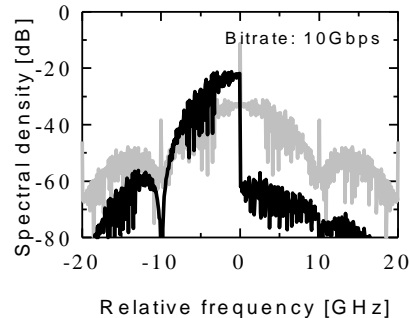


# Research on Tele-Communications supported by Optical Signal Processing

## Associate Professor Katsumi Takano

### (1) Optical single sideband (SSB) modulation for long-haul fiber transmission

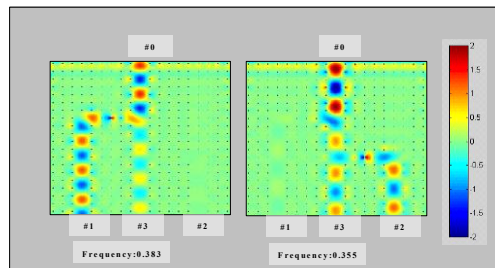


Black: Optical SSB modulation

Gray: Conventional intensity modulation

### Spectrum of Optical Single Sideband Modulation Signal

### (2) Functional photonic circuits based on photonic crystals



### Optical Circuit for Wavelength Channel Separation based on Photonic Crystals

### Content :

We are studying on optical communications and photonics in order to realizing comfortable human society. Large capacity tele-communications and ubiquitous sensor networks can serve comfortableness in lives, because the technologies can make barrier-less interfaces among humans, or between human and terminal machineries. Many kinds of idea for the technologies are proposed in our grope and evaluated theoretically and experimentally by ourselves. Some of detailed our techniques are introduced as follows.

- (1) Optical single sideband (SSB) modulation for Long-haul fiber transmission with high spectral efficiency
- (2) Functional photonic circuits based on photonic crystals
- (3) Functional photonic circuits using optical amplifiers
- (4) Optical modulation techniques for both analogue and digital signals

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