

## Multi optical Soliton generated by PANDA ring resonator for secure network communication

### Abstract:

In this study, new system of quantum cryptography for network communication is proposed. Multi optical Soliton can be generated and propagate via a nonlinear modified add/drop interferometer system incorporated with a time division multiple access (TDMA) system wherein the transportation of quantum codes is performed. To increase the channel capacity and security of the signals, the PANDA ring resonator is proposed. Chaotic output signals from the PANDA ring resonator are input into the add/drop filter system. Chaotic signals can be filtered by using the add/drop filter system in which multi dark and bright solitons can be obtained and used to generate entangled quantum codes for internet security. In this study soliton pulses with FWHM and FSR of 325 pm and 880 nm are generated, respectively, where the Gaussian pulse with a centre wavelength of 1.55  $\mu\text{m}$  and power of 600 mW is input into the system.