

# Coherent staking of ultrashort laser pulses in coherent external Fabry-Pérot cavity

## **Abstract**

The ultrashort laser pulses (USP) output from a coherent external Fabry-Pérot cavity (CEFPC) comprising a group delay dispersion (GDD) balanced ultrafast Bragg reflector and a negative-dispersion double-chirped mirror is investigated. As each of the input USP is coherently overlapped with each intracavity USP inside the CEFPC, an increasing USP output amplitude is gradually built up with time, until a steady-state condition is achieved. Analytical results manifest the multiplication factor (MF) or the ratio of output to input pulse repetition rate of the CEFPC equal to unity lead to the generation of continuous, timing-jitter-free, delayed amplitude at an identical repetition rate USP output. Besides, the output intensity pulse train settling time is directly proportional to the finesse of CEFPC.