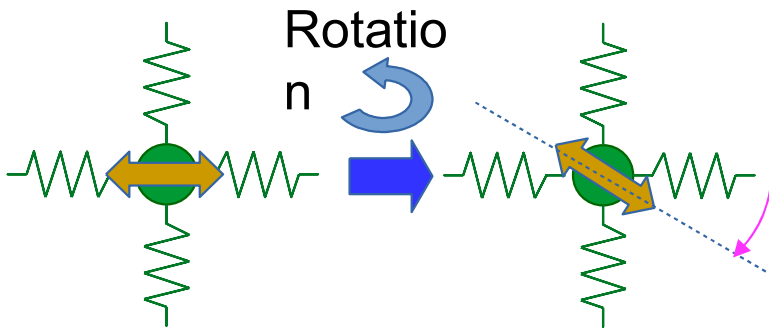


Frequency Modulated and Rate Integrating Gyroscope

Rate Integrating Gyroscope (RIG)

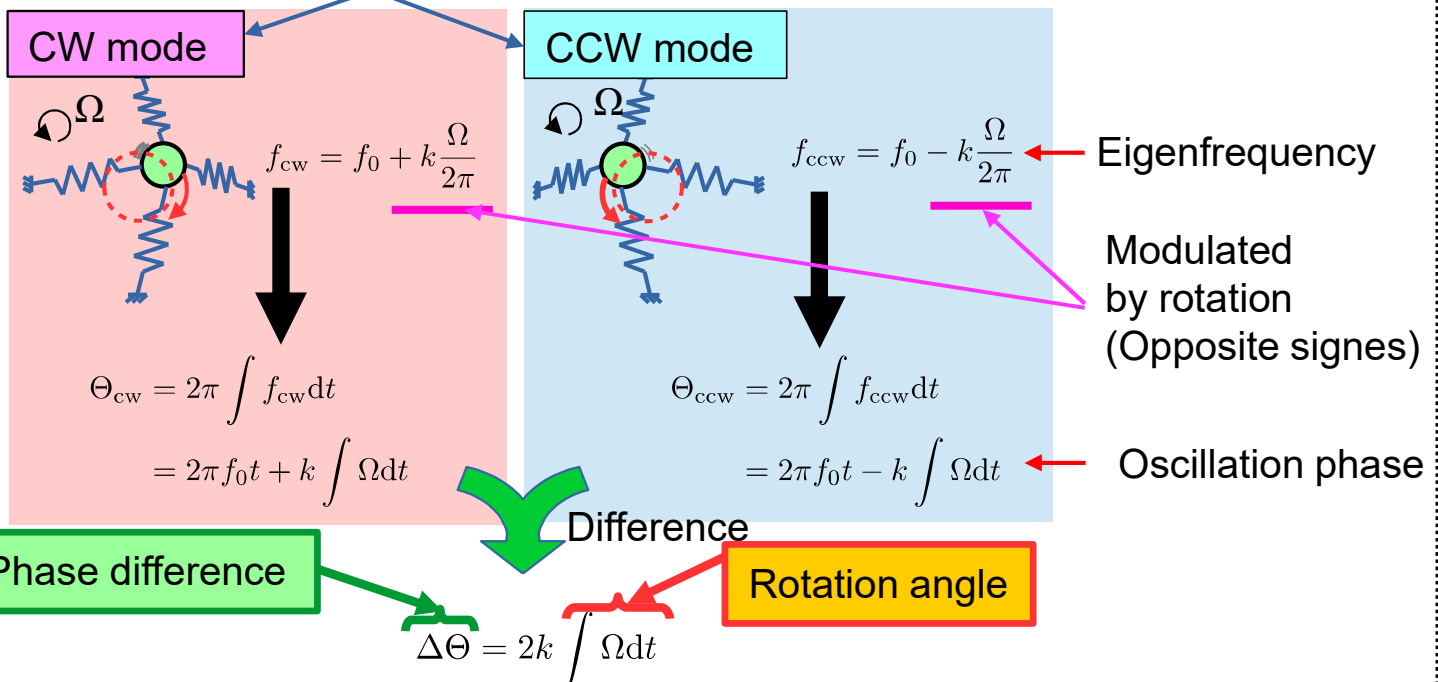


= Foucault pendulum



Principle

Eigenmodes of degenerated resonator



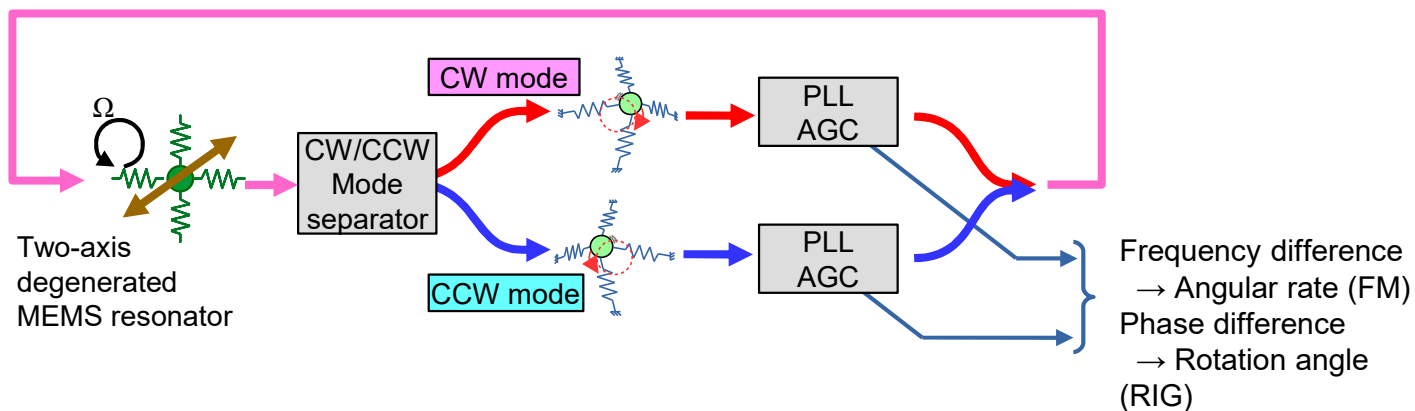
Common-mode disturbance (Temperature etc. → affect f_0) can be completely canceled out

Frequency difference → Angular rate (Ω) measurement
= FM gyroscope

Phase difference → Direct angle measurement
= Rate integrating gyroscope

Frequency Modulated and Rate Integrating Gyroscope

Control technique



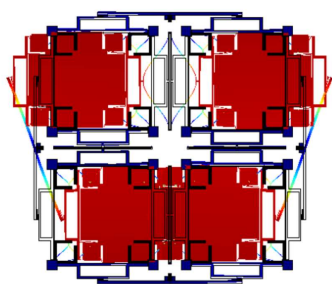
Both CW/CCW modes are **independently** controlled on a **same resonator**.

→ Common-mode rejection becomes perfect !!

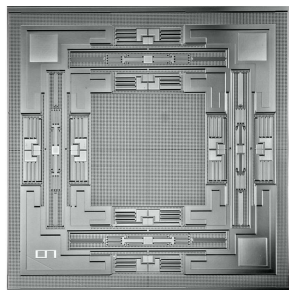
MEMS resonators

Any types of MEMS 2-axis degenerated resonator can be used

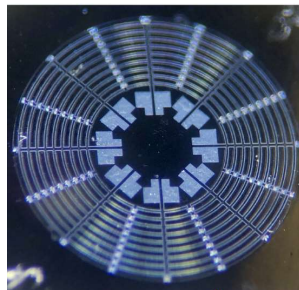
Quad-



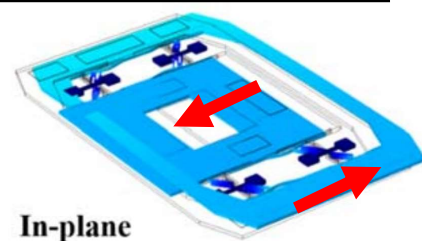
Dual-mass



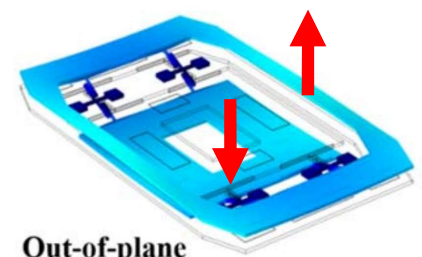
Ring



In-plane / Out-of-plane degenerated resonator



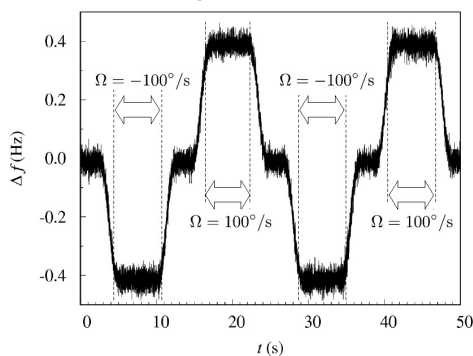
In-plane



Out-of-plane

Measurement results

FM-output



RIG-output

