

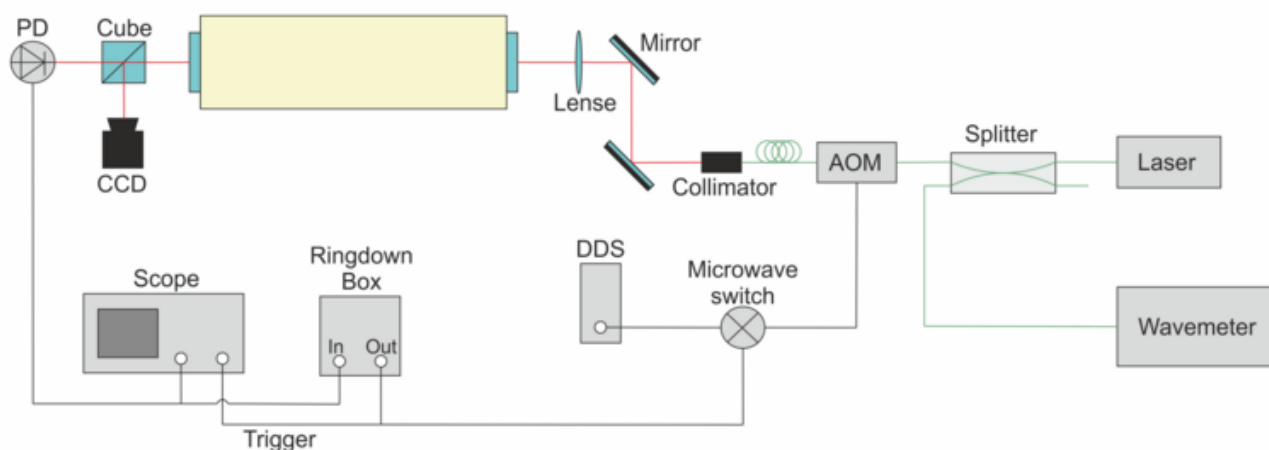
Ring-down Box

Application of the ring-down box

You can measure the finesse of a resonator with the ring-down box **without** locking the resonator!

Advantages

1. super fast (see characterization)
2. without locking the resonator



Measurement Method

Evaluation

Use this formula to analyse the datapoints:

$$y(x) = A \cdot \exp(-x/t) + y_0 \text{ with } x := \text{time}, t := \text{delay time}$$

Afterwards calculate the finesse with $F = 2\pi \cdot t \cdot \text{FSR}$ with $\text{FSR} := \text{free spectral range}$.

Electronic setup

Explanation of the operating principle

- Electronic drawing (PDF-file)

Bilder rein mit dem Kurbven etc.

Characterization

List of components

- Inverter: LT1363
 - Invert negativ input voltage to positiv
 - Datasheet_LT1363
 - Power supply: +/-5V
- Comparator: AD8561
 - Compare input voltage and threshold value
 - Datasheet_AD8561
 - Power supply: +/-5V
 - High speed timing: 7ns @ 5V
- Flip-Flop: SN74HC74
 - Output of trigger
 - Datasheet_SN74HC74
 - Power supply: +5V
 - High speed timing: 15ns

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Last update: **2018/01/18 15:30**

