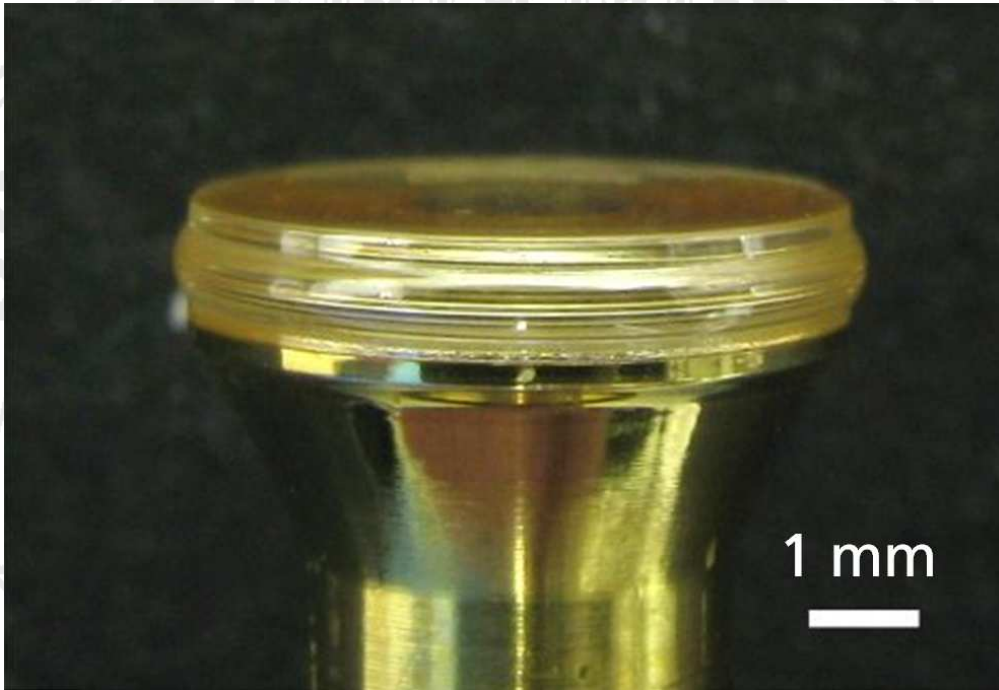


PHYSIKALISCHES KOLLOQUIUM

AM 23. APRIL 2012 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



**LASERS BECOME COLORFUL:
SYNTHESIZERS FOR LIGHT!**

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Widely tunable lasers are becoming a reality, pushing applications like optical spectroscopy as well as enabling new fundamental experiments in, e.g., quantum optics. Lasers by themselves emit at well-defined wavelengths. However, optical parametrical oscillators – synthesizers for light – can split photons and hence generate in principle light of any desired wavelength. There have been remarkable advances in realizing such systems. The innovations pushing this field will be reviewed and special emphasis will be on “whispering gallery mode resonators”: These are discs – as shown in the photograph – where light is guided by total internal reflection. Although their diameter is just about 1 cm, the light propagates within these discs for hundreds of meters, enhancing strongly the light-matter interaction and allowing realization of tunable lasers having the footprint of a postal stamp. Such systems are now studied and built in Freiburg.