



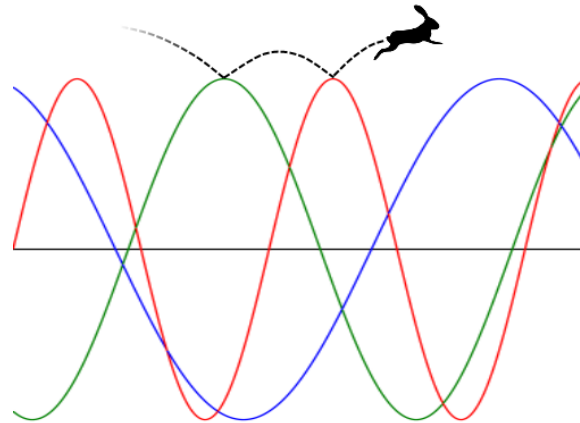
BA/SA/Group/Lab:

## Frequency Hopping

Wireless technologies have become increasingly popular over the past few decades with applications in many different areas. Many, such as WiFi and Bluetooth, share the unregulated 2.4 GHz frequency band. It has thus become increasingly important to deal with interference (and noise) in one's operating spectrum, which can make certain frequencies unavailable for communication temporarily or permanently.

One popular approach to solving this problem, employed by GSM and Bluetooth amongst others, is called "frequency hopping". It operates by subdividing the frequency band into a set of narrow channels and then rapidly cycling through the channels on all devices involved synchronously in a pseudo-random pattern. This ensures that sporadic interference or noise blocking a subset of the channels (as a running microwave might cause, for example) can only disrupt communication for short time spans.

We want to conduct some experiments with the aim of better understanding frequency hopping. Your task will be to implement frequency hopping and related algorithms on some programmable transceivers.



**Requirements:** Solid programming skills and knowledge of C are required. The student(s) should be able to work independently on this topic.

**Interested? Please contact me for more details!**

### Contacts

- Michael König: [michael.koenig@tik.ee.ethz.ch](mailto:michael.koenig@tik.ee.ethz.ch), ETZ G64.1