**Bachelor/masters Project in Instrumental Hydrology:**

**Development and deployment of a new, low-cost radon detector for continuous monitoring of groundwater – surface water interactions**

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Where does our river water come from when there is no rain where? Groundwater systems. Groundwater and surface water are intimately connected, with groundwater supplying vital water supplies during dry periods. However, it is difficult to quantitatively measure the amount of groundwater in a stream at any time and even more difficult to know how groundwater discharge changes through time. We use tracers, such as radon, to understand where groundwater is flowing into a river, and calculate how much water is being provided. Observing how this changes through time is still difficult though, especially because instruments are often expensive. This project involves testing, calibrating and using a new low cost high resolution radon detector for continuous radon measurement so we can learn how groundwater discharge changes through time, and particularly how it responds to rain events.

Aims of the project are to:

* Calibrate the new radon detector relative to an existing instrument
* Assess its sensitivity compared to a commercial device
* Deploy the instrument on a small stream in the Fichtelgebirge to observe how much groundwater is coming into the stream and how this changes through time. How does groundwater discharge relate to other parameters?

Ideally you should be a student interested in scientific instruments and how they work, but do not need any prior experience with instrument development.

  