Abstrakt:

Arterial spin labeling is a non-invasive MRI method for measuring brain tissue perfusion. As blood is essential for transporting oxygen and nutrients and clearing the waste products of metabolism, maintaining a normal rate of perfusion is essential for the brain's normal function. Chronic or acute disruption of blood delivery can have severe consequences on the function of the affected tissue or even cell death. The traditional methods of measuring perfusion are invasive and rely on exogenous contrast agent injection or involve the use of ionizing radiation. While arterial spin labeling is entirely non-invasive and safe and obviates the need for injection, it is still not widely used in clinical practice.

In this presentation, I will explain the basic principles of the method and their potential application. I will then present the hurdles that need to be overcome and mention my past work that addressed part of these issues. This work mainly involves the development of methods allowing easy sharing and processing of the data. Furthermore, I will mention the basic use cases for arterial spin labeling and illustrate this with examples of my work on validating arterial spin labeling for use in clinical research and practice. Finally, I will introduce the latest research on the innovative use of arterial spin labeling.