

MedViz Seminar: Friday 4th of March at 12⁰⁰, Møllendalsbakken 7:
Modelling of flow and elasticity in live tissue in space and time



From oil to medicine

Chief Scientist **Geir Nævdal**, International Research Institute of Stavanger (IRIS):

IRIS decided last year to add health research as a new area. We see this as an opportunity to apply our experience from modeling of flow in porous media and the use of data assimilation within medicine. Initial ideas in this direction will be presented.

This is joint work with Rolf Johan Lorentzen and Ove Sævareid.

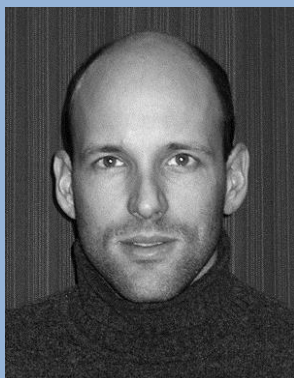


Perfusion models in a mathematical formulation - "why we eventually fail"

PostDoc **Erik Hanson**, Dept. of Mathematics, UiB

In this talk we address traditional one-compartment (1C) models in the context of voxelwise perfusion estimation. As mathematicians, we possess both analytical and experimental results indicating that the usage of traditional 1C models on voxels or other small volumes may violate the physical assumptions on which the models are based. Clinical or pre-clinical use of these models are hopefully not as black and white as in the mathematical theory. In this talk we aim to bridge

between the mathematics and the medical applications and thereby get a better understanding of limitations and possibilities within the field.



Elastic modeling of live human tissue upon breathing - detection of tissue stiffness in a pilot study involving fibrotic and healthy kidneys

PostDoc **Erlend Hodneland**, Christian Michelsen Research AS

Medical image registration can be formulated as a tissue deformation problem, where parameter estimation methods are used to obtain a deformation field. We suggest that image registration of high-contrast MR images might have the potential to be used as a tool to produce imaging biomarkers sensitive to pathology affecting tissue stiffness. In this pilot study including ten healthy volunteers and ten patients with fibrosis, we investigate whether image registration phrased as a tissue modelling problem is sensitive to pathological changes in the tissue.

THE SEMINAR IS OPEN AND FREE. FRUIT & COFFEE WILL BE SERVED. ☺