

# Estimating compression of polar ice

Tuomas Rajala<sup>1</sup>, Aila Särkkä<sup>2</sup>, Claudia Redenbach<sup>3</sup> and  
Martina Sormani<sup>3,4</sup>

<sup>1</sup>*University College London, UK, t.rajala@ucl.ac.uk*

<sup>2</sup>*Chalmers University of Technology and University of Gothenburg, Sweden,  
aila@chalmers.se*

<sup>3</sup>*University of Kaiserslautern, Germany, redenbach@mathematik.uni-kl.de*

<sup>4</sup>*Fraunhofer-Institut für Techno- und Wirtschaftsmathematik, Germany,  
martina.sormani@itwm.fraunhofer.de*

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Analysis of deep polar ice cores has become an important tool for deriving climate information from the past. Interpretation of ice core records requires an accurate dating of the ice. The recent dating relies on models where the key element is the simulation of the individual history of ice deformation for each specific core site. We present a two-stage non-parametric method for the estimation of the deformation history in polar ice using the measured anisotropy of air inclusions from deep ice cores. First, we fit ellipsoids to the pattern of point-to-point distance vectors to estimate the direction of anisotropy. Then, we estimate the scale of anisotropy by identifying the back-transformation resulting in the most isotropic pattern. Finally, the method is applied to estimate the compression in polar ice air bubble patterns.