



Berlin  
Mathematical  
School

## BMS Friday Colloquium

**Friday 9 January 2015 at 14:15**

*Tea & Cookies starting at 13:00*

BMS Loft, Urania, An der Urania 17, 10787 Berlin

### Joachim Weickert (*Saarland University*)

#### Image Compression with Differential Equations

Partial differential equations (PDEs) are widely used to model phenomena in nature. In his talk, Weickert will show that they also have a high potential to compress digital images.

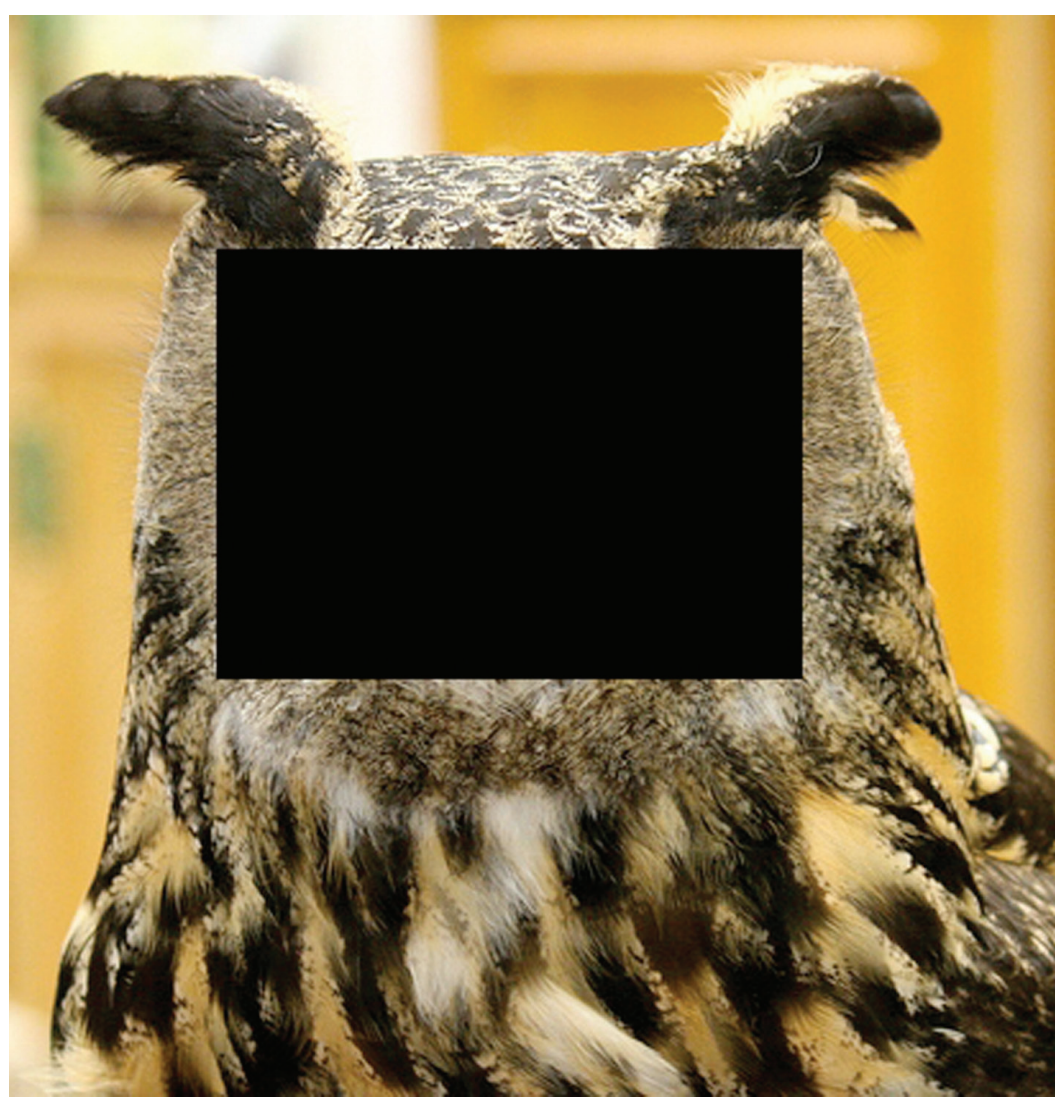
The idea sounds temptingly simple: we keep only a small amount of the pixels and reconstruct the remaining data with PDE-based interpolation. This gives rise to three inter-dependent questions:

1. Which data should be kept?
2. What are the most useful PDEs?
3. How can the selected data be encoded efficiently?

Solving these problems requires the combining of ideas from different mathematical disciplines such as mathematical modeling, optimization, interpolation and approximation, and numerical methods for PDEs.

Since the talk is intended for a broad audience, Weickert will focus on the main ideas, therefore no specific knowledge in image processing is required.

Joachim Weickert is professor of mathematics and computer science at Saarland University, where he heads the Mathematical Image Analysis Group. He has developed many methods for image processing and computer vision problems that are based on differential equations or variational principles. After completing his habilitation in computer science at U Mannheim in 2001, Weickert accepted a position as full professor at U Saarland in 2002. For his work in image processing, he was awarded the Gottfried Wilhelm Leibniz Prize in 2010.



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