

Acta Numerica 2021

Volume 30

CONTENTS

Numerical homogenization beyond scale separation 1
Robert Altmann, Patrick Henning and Daniel Peterseim

Deep learning: a statistical viewpoint 87
Peter L. Bartlett, Andrea Montanari and Alexander Rakhlin

Fit without fear: remarkable mathematical phenomena
of deep learning through the prism of interpolation 203
Mikhail Belkin

Optimal transportation, modelling and numerical simulation. . . 249
Jean-David Benamou

Neural network approximation. 327
Ronald DeVore, Boris Hanin and Guergana Petrova

Learning physics-based models from data: perspectives
from inverse problems and model reduction 445
Omar Ghattas and Karen Willcox

Tensors in computations. 555
Lek-Heng Lim

Modelling and computation of liquid crystals. 765
Wei Wang, Lei Zhang and Pingwen Zhang

Acta Numerica is an annual publication containing invited survey papers by leading researchers in numerical mathematics and scientific computing. The papers present overviews of recent developments in their area and provide ‘state of the art’ techniques and analysis.

Cambridge Core

For further information about this journal please
go to the journal website at:
[cambridge.org/anu](https://www.cambridge.org/anu)

CAMBRIDGE
UNIVERSITY PRESS

ISBN 978-1-00-909897-7



9 781009 098977