



## Laudatio for the Award Ceremony of the Prix Schläfli Mathematics 2018 of the Swiss Academy of Sciences (SCNAT) for Dr Livio Liechti

The Jury of the Prix Schläfli 2018 in Mathematics of the Swiss Academy of Sciences (SCNAT), consisting of Prof. Dr Jérémy Blanc (University of Basel), Prof. Dr Norbert Hungerbühler (ETH Zürich), Prof. Dr Urs Lang (ETH Zürich), Prof. Dr Thomas Studer (University of Bern), and Prof. Dr Alain Valette (University of Neuchâtel), has decided to award the Prix Schläfli 2018 in Mathematics to Dr Livio Liechti for his doctoral thesis 'On the spectra of mapping classes and the 4-genera of positive knots' in the area of low-dimensional topology and geometry.

Livio Liechti wrote his dissertation under the supervision of Prof. Dr Sebastian Baader at the University of Bern in 2014 to 2017. He earned his doctoral degree in June 2017 with the distinction *summa cum laude*. He is now a researcher at the Institut de Mathématiques de Jussieu in Paris, holding an Early Postdoc Mobility grant from the Swiss National Science Foundation.

Dr Livio Liechti's work opens remarkable new perspectives in knot theory and the geometry of surfaces. The central objects of his dissertation are mapping classes of surfaces, which have become an indispensable tool in the study of low-dimensional manifolds. One of his main results refers to so-called pseudo-Anosov mapping classes of closed orientable surfaces of genus at least one and provides an optimal lower bound, in dependence of the genus, for the stretch factor of all mapping classes arising from a construction due to R. C. Penner. The absolute minimum is attained for surfaces of genus one and equals the square of the golden ratio. The proof of this beautiful formula is based on a skilful combination of Perron-Frobenius theory and the combinatorics of simple closed curves on surfaces. A variety of further important results complete this impressive work. The resulting publications in excellent international journals testify to the depth and breath of Livio Liechti's scientific contributions to low-dimensional geometry and topology.

Prof. Dr Urs Lang, President of the Jury

Award Ceremony, 25 May 2018 before the Delegate Assembly of the SCNAT, Bern