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Ulrike Tillmann* (tillmann@maths.ox.ac.uk), Mathematical Institute, 24-29 St Giles, Oxford, OX1 3LB, England. *Spaces of graphs and surfaces - On the work of Soren Galatius.*

Graphs and surfaces are relatively simple, fundamental geometric objects. It is natural to study these in continuous families (or bundles). Only in the last decade we have started to understand these in terms of characteristic classes as we have understood vector spaces since the work of Chern, Pontryagin and Whitney.

One of Soren Galatius' remarkable results is a computation of the (stable) characteristic classes of graph bundles. In more precise and algebraic terms, he shows that the natural action of the symmetric group on the generators of the free group which defines an inclusion $\Sigma_n \rightarrow \text{Aut}(F_n)$ induces an isomorphism in cohomology in degrees smaller than $(n-1)/2$. In particular, there is no rational cohomology in these degrees.

The ideas and methods that went into his paper grew out of a proof of the Mumford conjecture, now Madsen-Weiss theorem. The latter determines the (stable) characteristic classes of surface bundles. Vice versa, the new methods developed for the case of graphs has led to a simplified approach to the Mumford conjecture and many generalisations of it.

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