# Workshop on Interplay between symplectic geometry and cluster theory

IWH Heidelberg

January 16th - 18th, 2023

Cluster algebras were introduced by Fomin and Zelevinsky in 2000 in the context of Lie theory. In the last twenty-two years the theory of cluster algebras gave life to several fascinating applications between different fields of mathematics such as quiver representations, Calabi-Yau categories, Teichmüller theory, Poisson geometry, and many others.

An interesting example stems from the work of Vianna [1], where a connection between Markov triples and not Hamiltonian isotopic Lagrangian tori is established. Motivated by this result, we would like to further understand the relations between cluster structures, quiver representations and almost toric fibrations.

The aim of this workshop is to gain a deeper understanding of these interplay thanks to two mini-courses held by experts as well as some research talks. The IWH will provide us with a charming environment for discussions towards further explorations and perspectives.

# References

[1] Renato Ferreira de Velloso Vianna. Infinitely many exotic monotone Lagrangian tori in $\mathbb{CP}^2$. *J. Topol.*, 9(2):535–551, 2016.