Module name	**Scientific Visualisation**
Module number	CMS-TRK-SciVis
Senior Lecturer	Prof. Dr. Stefan Gumhold stefan.gumhold@tu-dresden.de
Qualification objectives	Students are familiar with the foundations of stereo-based visualisation, particle, terrain and volume visualisation. They understand how different features are depicted on visual attributes. They know the necessary hardware, data structures and algorithms. In particular, they are familiar with the Rendering approaches that allow for interactive visualisation of large datasets. They know how to implement hierarchical structuring and batch-based structuring.
Contents	The module includes the application areas of stereoscopy, particle visualisation, terrain visualisation, volume visualisation. The scope of stereoscopy includes perception, display technology and broadcasting, and the scope of particle visualisation includes datasets, glyphen-based visualisation and efficient presentation algorithms. The terrain models, data structures and efficient representational algorithms in the terrain visualisation application area and the volume Rendering Integral, lighting models, advanced transfer function design, and representational algorithms for various volume representations are also included in the volume visualisation application area. The module also includes topological methods, vector field visualisation and tensor field visualisation.
Forms of teaching and learning	The module includes lectures of 2 SWS, exercises of 2 SWS and self-study. The language of the lectures and exercises will be English.
Eligibility for participation	The skills to be acquired in the modules CMS-TRK-FCG Foundations of Computer Graphics and CMS-COR-VIZ Data Visualisation are required.

Usability	In the Computational Modeling and Simulation Masters Course, the module is a compulsory voting module in Track Applied Artificial Intelligence, Track Visual Computing, Track Computational Engineering and Track Computational Life Science, to be selected in accordance with Annex 2 to the Specific Examination Regulations. The module cannot be chosen in the Master's Course Computational Modeling and Simulation if this or a module with substantially the same content from a Course with which the entry conditions under § 3 of the Studienordnung have been met has already been completed. The module provides the pre-requisites for the modules it designates under the pre-requisites for participation.
Conditions for the award of credits	Credits are awarded when the module test is passed. The module test consists of a 90-minute away day. Bonus performance for away time is the release of 15 hours of exercise tasks. The language of the test will be English.
Credits and marks	The module allows 5 credit points to be obtained. The module score corresponds to the test performance score.
Frequency of the module	The module is offered every summer semester.
Workload	The total workload is 150 hours.
Duration of the module	The module covers 1 semester.