As today’s supercomputers are built out of massively parallel processors, parallel programming for these systems for best parallel performance becomes an important task for today’s developers. One example is the most recent Intel Xeon processor (aka „Skylake“), which employs up to 28 cores with wide 512-bit SIMD instructions. In this talk, we will review the architecture of the Intel Xeon processor and show how OpenMP can be applied to program for such processors.

Starting from the node-level architecture, we will dive into the micro-architecture of the Intel Xeon processor and provide insights into its performance capabilities. We will then turn towards the OpenMP programming model. After a quick recap of traditional OpenMP threading techniques, we will introduce the concepts of modern OpenMP programming with OpenMP tasks, OpenMP SIMD, and how to control memory allocation and affinity.