1126-51-100 **Alexander I. Bobenko**, **Nikolay D. Dimitrov*** (futurolog@gmail.com) and **Stefan Sechelmann**. *Discrete uniformization via hyper-ideal circle patterns.*

In this talk I will present a discrete version of the classical uniformization theorem based on the theory of hyper-ideal circle patterns. It applies to surfaces represented as finite branched covers over the Riemann sphere as well as to compact polyhedral surfaces with non-positive cone singularities. The former include all Riemann surfaces realized as algebraic curves, and more generally, any closed Riemann surface with a choice of a meromorphic function on it. The latter include any closed Riemann surface with a choice of a quadratic differential on it. The main result is that for such surfaces discrete uniformization via hyper-ideal circle patterns always exists and is unique (up to isometry). Furthermore, there is an algorithm, using convex optimization, that constructs the desired discrete uniformization. This kind of discrete uniformization is the result of an interplay between realization theorems for ideal polyhedra (Rivin) and hyper-ideal polyhedra (Bao and Bonahon) in hyperbolic three-space, and their generalization to hyper-ideal circle patterns on surfaces with cone singularities (Schlenker). (Received January 06, 2017)