Geometric realization of cyclically branched covers over spheres
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Abstract: In this talk, we plan to find geometric realizations of cyclic branched covers over spheres as triply periodic polyhedral surfaces. In the pre-talk, we will investigate a specific example and a brief theory of cyclic covers over spheres. In the main talk, we relax Coxeter-Petrie’s definition of infinite regular polyhedra to construct such surfaces whose polyhedral metrics induce conformal structures. This classification yields surfaces that are conformally equivalent to well-known surfaces such as Fermat’s quartic, Schoen’s minimal I-WP surface, and Kepler’s small stellated dodecahedron.