On a construction of quaternionic and octonionic Riemann surfaces

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We present an original way to introduce quaternionic and octonionic analogs of the classical Riemann surfaces.

The construction of these manifolds has nice peculiarities and the scrutiny of Bernhard Riemann approach to Riemann surfaces, mainly based on conformality, leads to the definition of slice conformal or slice isothermal parameterization of Riemann 4-manifold and 8-manifold. These new classes of manifolds include slice regular quaternionic and octonionic curves, graphs of slice regular functions, the 4 and 8 dimensional sphere and helicoidal and catenoidal manifolds.

This is a joint work with Graziano Gentili and Jasna Prezelj.