

**Negatively curved Einstein metrics on quotients of
4-dimensional hyperbolic manifolds.**

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Few examples of closed Einstein manifolds with negative scalar curvature are known in dimensions larger than 4, and until recently it was believed that the only negatively curved ones were the trivial ones, ie closed quotients of (complex)-hyperbolic space. We will construct in this talk new examples of non-trivial closed negatively curved Einstein 4-manifolds.

More precisely, we will show that Einstein metrics with negative sectional (and scalar) curvature can be found on quotients of “large” closed hyperbolic 4-manifolds with symmetries. The proof is via a glueing procedure, starting from an approximate Einstein metric that is obtained as the interpolation between a “black-hole – type” model metric near the symmetry locus and the hyperbolic metric at large distances. This is a joint work with J. Fine (ULB, Brussels).