We consider random planar maps weighted by the critical Fortuin–Kasteleyn percolation model with parameter $q \in (0, 4)$. The study of these surfaces is central to the theory of Liouville quantum gravity. We obtain rigorously the value of critical exponents associated with the length of cluster interfaces, which is shown to be

$$\frac{4}{\pi} \arccos \left( \frac{\sqrt{2} - \sqrt{q}}{2} \right).$$

This is consistent with physics predictions; in particular, applying the KPZ formula we recover the dimension of SLE curves.

The talk will begin with a general introduction to Liouville quantum gravity. This is joint work with Benoît Laslier and Gourab Ray (Cambridge).