Representation varieties detect essential surfaces

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Extending Culler-Shalen theory, Hara and I presented a way to construct certain kinds of branched surfaces (possibly without any branch) in a 3-manifold from an ideal point of a curve in the $\text{SL}_n$-character variety. There exists an essential surface in some 3-manifold known to be not detected in the classical $\text{SL}_2$-theory. We show that every essential surface in a 3-manifold is given by the ideal point of a line in the $\text{SL}_n$-character variety for some $n$. The talk is partially based on joint works with Stefan Friedl and Matthias Nagel, and also with Takashi Hara.