1070-57-146 **Eric B. Chesebro*** (eric.chesebro@mso.umt.edu). *Closed surfaces and the character variety.* Preliminary report.

In the eighties, Culler and Shalen developed a procedure for using the $\mathrm{SL}(2,\mathbb{C})$-character variety for a 3-manifold to construct essential surfaces in the manifold. Since then, their techniques have been carefully studied and are critical in the proofs of several famous theorems. Most of the invesigation of the Culler-Shalen machinery has focused on the case when the associated essential surface has non-empty boundary. Here we will review the basics of their theory and give a new characterization of when associated surfaces are closed. (Received February 07, 2011)