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Joan S. Birman, Department of Mathematics, Barnard-Columbia, 2990 Broadway, New York, NY 10027, **Tara E Brendle**, Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803-4918, and **Nathan D. Broaddus*** (broaddus@math.uchicago.edu), Department of Mathematics, 5734 S University Ave, Chicago, IL 60637. *Heegaard splitting and 3-manifold invariants from the Johnson-Morita homomorphisms*. Preliminary report.

Our talk will be a report on joint work with Joan Birman and Tara Brendle. We study 3-manifolds via their Heegaard splittings, where a Heegaard splitting of genus g of a 3-manifold is determined by the choice of the ‘Heegaard gluing map’, which we regard as an element in the mapping class group \mathcal{M}_g of the Heegaard surface S_g . Various questions about equivalence of Heegaard splittings and topological equivalence of 3-manifolds can in this way be referred to questions about the groups M_g , $g = 1, 2, \dots$, and from there to appropriate homomorphic images of \mathcal{M}_g . In particular, we set up a program for studying 3-manifolds via the groups in the Johnson filtration of \mathcal{M}_g , and carry it out in detail for the first two cases. Our work on the third case is incomplete at this writing. (Received September 25, 2006)