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We consider Hurwitz spaces  $\mathcal{H}$  parametrizing maps between smooth marked genus zero curves, with prescribed ramification.  $\mathcal{H}$  defines a correspondence between the moduli spaces  $\mathcal{M}_{0,n_1}$  and  $\mathcal{M}_{0,n_2}$ , parametrizing the source and target curves, respectively. For given compactifications  $X_1$  and  $X_2$  of  $\mathcal{M}_{0,n_1}$  and  $\mathcal{M}_{0,n_2}$ , this induces maps of homology groups  $H_{2k}(X_2, \mathbb{C}) \rightarrow H_{2k}(X_1, \mathbb{C})$ . This correspondence satisfies a desirable stability condition on the Deligne-Mumford compactifications  $\overline{\mathcal{M}}_{0,n}$ . We introduce a natural filtration of  $H_{2k}(\overline{\mathcal{M}}_{0,n}, \mathbb{C})$  indexed by the poset of partitions of  $k$ , and show that this filtration is preserved by the Hurwitz correspondence. We use this filtration to find an alternate modular compactification of  $\mathcal{M}_{0,n}$  on which the Hurwitz correspondence is stable on half of the homology groups, and prove that no similar result is possible for the other half. We finally discuss the connection to complex dynamics and dynamical degrees. This project is advised by S. Koch and D. Speyer. (Received August 10, 2015)