On extensions in the Jacobian algebra of a surface without punctures

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Given an unpunctured surface $(S, M)$, we study extensions in the Jacobian algebra $J(Q, W)$ and in the cluster category $\mathcal{C}(S, M)$. We explicitly describe the middle terms of non-split short exact sequences in $J(Q, W)$ and give a formula for dimension of $\text{Ext}^1(M_1, M_2)$ in terms of the intersection number of the arcs associated to indecomposable string modules $M_1$ and $M_2$.

Joint work with Sibylle Schroll.