Rational self-closeness numbers of mapping spaces

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For a closed simply-connected $2n$-dimensional manifold M, it has been proved that the components of the free mapping space from M to $2n$-sphere have exactly two different rational homotopy types. However, since this result is proved by algebraic models of components, we do not know whether other homotopy invariants distinguish these two types or not. In this talk, we completely determine the self-closeness numbers of rationalized components of the mapping space and prove that they do distinguish different rational homotopy types. The methods also have the potential to be extended to other mapping spaces.