Complex interpolation and a new embedding for exponentially weighted modulation spaces

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We recall the complex interpolation functor, introduce the notion of common retraction and coretraction for families of Banach spaces, and formulate a framework for identifying complex interpolation spaces. The fact that the complex interpolation space of a pair of Besov or modulation spaces is another Besov or modulation space, respectively, is easily recovered in this framework. Moreover, our result is applicable to modulation spaces with exponential regularity $E^s_{p,q}$. In order to do so, we construct a common ambient space for the whole family of $E^s_{p,q}$ and obtain the embedding $E^s_{p_1,q} \hookrightarrow E^s_{p_2,q} \hookrightarrow$ for $p_1 \leq p_2$.