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*Long-time dynamics of the sine-Gordon equation*

I will discuss the soliton resolution and asymptotic stability for the sine-Gordon equation. It is known that the obstruction to the asymptotic stability for the sine-Gordon equation in the energy space is the existence of small breathers which is also closely related to the emergence of wobbling kinks. Our stability analysis gives a criterion for the weight which is sharp up to the endpoint so that the asymptotic stability holds. This is joint work with Jiaqi Liu and Bingying Lu.