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Michele Del Zotto*, Simons Center for Geometry and Physics, State University of New York, Stony Brook, NY 11794-3636, and **Guglielmo Lockhart**. *On Exceptional Instanton Strings*.

There are only six “pure” 6d gauge theories which have a superconformal UV completion. The corresponding gauge groups are $SU(3)$, $SO(8)$, F_4 , E_6 , E_7 , and E_8 . These exceptional models have BPS strings which are also instantons for the corresponding gauge groups. The ADHM construction, however, does not capture the corresponding worldsheets. For G simply-laced, we determine the 2d $\mathcal{N} = (0, 4)$ worldsheet theories of such BPS instanton strings by a simple geometric engineering argument. These are given by a twisted S^2 compactification of well-known families of non-lagrangian 4d $\mathcal{N} = 2$ SCFTs, where the 6d instanton number is mapped to the rank of the corresponding 4d SCFT. This determines their anomaly polynomials and, via topological strings, establishes an interesting relation among the corresponding $T^2 \times S^2$ partition functions and the Hilbert series for moduli spaces of G instantons. Such relations allows to “bootstrap” the corresponding elliptic genera by modularity. As an example of such procedure, the elliptic genera of the one-instanton strings are determined. As an aside, these results unveil a rather surprising relation with the Schur index of the corresponding 4d $\mathcal{N} = 2$ models. (Received September 06, 2016)