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Leandro Junes* (junes@calu.edu), 1053 Pennsylvania Avenue, California, PA 15419, and
Rigoberto Florez and **Eva Czabarka**. *Enumerations on Non-decreasing Dyck Paths*.

A non-decreasing Dyck path of length $2n$ is a diagonal lattice path from $(0, 0)$ to $(2n, 0)$, consisting of n up-steps (along the vector $(1, 1)$) and n down-steps (along the vector $(1, -1)$), such that the path never goes below the x -axis and the sequence of its local minima forms a non-decreasing sequence. We provide several statistics on non-decreasing Dyck paths related with peaks, valleys, and pyramids. In particular, we provide close formulas for peaks, pyramid weights, and indexed sums of pyramid weights for all non-decreasing Dyck paths of length $2n$. We also show that an indexed sum on pyramid weights depends only on the size and maximum element of the indexing set. (Received September 17, 2016)