We introduce the class of Cohen-Macaulay (=CM) dg (=differential graded) modules over Gorenstein dg algebras and study their basic properties. We show that the category of CM dg modules forms a Frobenius extriangulated category, in the sense of Nakaoka and Palu, and it admits almost split extensions. We also study representation-finite $d$-self-injective dg algebras $A$ in detail. In particular, we classify the Auslander-Reiten (=AR) quivers of CMA for those $A$ in terms of $(-d - 1)$-Calabi-Yau (=CY) configurations, which are Riedtmann’s configurations for the case $d = 0$. For any given $(-d - 1)$-CY configuration $C$, we show there exists a $d$-self-injective dg algebra $A$, such that the AR quiver of CMA is given by $C$.

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