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Optimal and efficient designs for Gompertz regression models

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Abstract Gompertz functions have been widely used in characterizing biological growth curves. In this paper we consider D-optimal designs for Gompertz regression models. For homoscedastic Gompertz regression models with two or three parameters, we prove that D-optimal designs are minimally supported. Considering that minimally supported designs might not be applicable in practice, alternative designs are proposed. Using the D-optimal designs as benchmark designs, these alternative designs are found to be efficient in general.

Keywords D-optimality · Local optimality · Minimally supported designs · Sigmoid growth curve · Tchebycheff system