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Recent results of stability in functional inequalities

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The lecture is devoted to a review of some stability results in simple interpolation inequalities, typically Gagliardo-Nirenberg-Sobolev inequalities. When optimal constants are known and optimal functions are characterized, it is a natural question to ask whether the deficit, that is, the difference of the two sides of the inequality, controls a distance to the set of optimal functions. After the work of Bianchi and Egnell on Sobolev inequalities, more than 30 years ago, many authors developped similar results, where the analysis of the linearized problem and compactness methods play an essential role. A major drawback is that explicit estimates usually cannot be obtained by such methods. In the recent years, the efforts have been focused on the quantitative properties, for instance, the optimal power of the distance controlled by the deficit. The results presented here go one step beyond this and are intended to give explicit estimates on the stability constants in Bianchi-Egnell type estimates by various methods.

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