

**Some recent results, applications, and open problems concerning
Opial's inequality**

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We sketch some recent developments concerning the classic inequality

$$\int_0^1 |yy'| \leq (1/4) \int_0^1 |y'|^2$$
$$y(0) = y(1) = 0$$

discovered by Zdzislaw Opial in 1960. There are significant applications of this inequality to differential equations, some of which we discuss. Also there are several interesting extensions when the derivative is replaced by an operator and/or weights are considered. Although there has been much progress due to such writers as Boyd, Agarwal, Bloom, Anastassiou, Pecaric, and others, many open problems remain.