

# **The Lewy-Stampacchia inequality for bilateral problems**

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## **Abstract**

In this paper we prove that every solution of the bilateral obstacle problem for a fairly general Leray-Lions operator of second order satisfies the Lewy-Stampacchia inequality, even if the solution is not unique. The proof is based on the approximation of the bilateral problem by the natural penalization and on the use of a modified bilateral problem for which uniqueness holds true. The Lewy-Stampacchia inequality is obtained independently for each of the two obstacles.