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Summary: In this paper, a new kind of second-order contingent derivative is introduced, termed second-order $S$-derivative. Some properties of second-order $S$-derivative and the relationship to second-order contingent derivative are discussed. Then, with the help of second-order $S$-derivative, relationships are established between the minimum of contingent derivative of set-valued maps and contingent derivative of perturbation maps.

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second-order $S$-derivative; set-valued map; perturbation map

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