

New examples on the Lavrientiev gap using fractals

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We construct new examples on the Lavrentiev gap phenomenon using fractals. First, we apply this technique to the setting of minimizer with variable exponents. We extend the well known example of Zhikov, who used a checkerboard setup, where the exponent crosses the dimension. We show that the Lavrentiev gap occurs for any range of exponents. This gives a negative answer to the conjecture that the dimension plays a critical threshold for the exponent. Second, we apply our technique to the double-phase potential with similar results. The talk is based on joint work with Anna Kh. Balci and Mikhail Surnachev.

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