

## New examples on Lavrentiev gap using fractals

Anna Balci<sup>(1)</sup>, Lars Diening<sup>(1)</sup>, and Mikhail Surnachev<sup>(2)</sup>

(1) Bielefeld University, Germany

(2) Keldysh Institute of Applied Mathematics, Russian Academy of Sciences, Moscow, Russia

e-mail: akhripun@math.uni-bielefeld.de

We construct new examples on Lavrentiev phenomenon using fractal contact sets. Comparing to the well-known examples of Zhikov it is not important that at the saddle point the variable exponent crosses the threshold dimension. As a consequence we give the negative answer to the well-known conjecture that the dimension plays a critical role for the Lavrentiev gap to appear. We apply our method to the setting of variable exponents, the double phase potential and weighted  $p$ -energy.

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