

## Lifshitz points at large $n$

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We review our recent results for critical exponents of  $m$ -axial Lifshitz points in the first order of the large- $n$  expansion obtained in collaboration with Yu. M. Pis'mak and H. W. Diehl (J. Phys.: Cond. Mat. 17, S1947 (2005) and arXiv:1202.2464v2). Special attention is paid to the cases where explicit dependencies can be derived on arbitrary space dimension  $d$ .

Most interesting are two cases:

(i)  $d = m + 1$  related to Lorentz-violating theories very intensively developed at present in high-energy physics

and

(ii)  $d = 3, m = 1, n = 3$ , which is of special interest for condensed-matter physics. Here we compare our numerical estimates of critical exponents with that of the  $\epsilon$  expansion and most recent nonperturbative renormalization group calculations by Essafi, Kownacki, and Mouhanna (arXiv:1202.5946v1).