

**Oberseminar Theoretische Informatik**  
Sommersemester 2006

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## **Parameterized Complexity of Finding Regular Induced Subgraphs**

Mo, 15.05.2006 um 14 Uhr (s.t.) im SR 226 (Carl-Zeiß-Str. 3, 2. Stock).

The  $r$ -REGULAR INDUCED SUBGRAPH problem asks, given a graph  $G$  and a non-negative integer  $k$ , whether  $G$  contains an  $r$ -regular induced subgraph of size at least  $k$ , that is, an induced subgraph in which every vertex has degree exactly  $r$ . We examine its parameterization  $k$ -SIZE  $r$ -REGULAR INDUCED SUBGRAPH with  $k$  as parameter and prove that it is  $W[1]$ -hard. We also examine the parameterized complexity of the dual parameterized problem, namely, the  $k$ -ALMOST  $r$ -REGULAR GRAPH problem, which asks for a given graph  $G$  and a non-negative integer  $k$  whether  $G$  can be made  $r$ -regular by deleting at most  $k$  vertices. We show that this problem is in FPT by proving the existence of a problem kernel of size  $O(kr(r+k)^2)$ .

Internetseite der Veranstaltung:

<http://theinf1.informatik.uni-jena.de/teaching/ss06/oberseminar-ss06>