

Oberseminar Theoretische Informatik  
Wintersemester 2007/2008

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## Kernelization and Complexity Results for Connectivity Augmentation Problems

Mo, 19.11.2007 um 14 Uhr (c.t.) im SR 3319 (Ernst-Abbe-Platz 2, 3. Stock).

Connectivity augmentation problems ask for adding a set of at most  $k$  edges (called *links*) whose insertion makes a given graph satisfy a specified connectivity property, such as bridge-connectivity or biconnectivity. We show that, for bridge-connectivity and biconnectivity, the respective connectivity augmentation problems admit problem kernels with  $O(k^2)$  vertices and links. Moreover, we study partial connectivity augmentation problems, naturally generalizing connectivity augmentation problems. Here, we do not require that, after adding the edges, the entire graph should satisfy the connectivity property, but a large subgraph. In this setting, two polynomial-time solvable connectivity augmentation problems behave differently, namely, the *partial* biconnectivity augmentation problem remains polynomial-time solvable whereas the *partial* strong connectivity augmentation problem becomes W[2]-hard with respect to  $k$ .

Internetseite der Veranstaltung:

<http://theinf1.informatik.uni-jena.de/teaching/ws0708/oberseminar-ws0708>