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Cycles in the random d-process

The random d-process is a random time-evolving process introduced by Erdős in the 1980's. The process starts with n isolated vertices and at each step picks a pair of vertices uniformly at random. If both vertices have degree $\leq d-1$ and were not picked together before, an edge is added between them. The process runs until no more edges can be added.

Ruciński and Wormald proved in their paper *Random Graph Processes with Degree Restrictions* that whp the final result of the random d-process is d-regular (given dn is even). In 1997, the same authors proved in their paper *Random Graph Processes with Maximum Degree* 2 that the number of short cycles in the random 2-process is asymptotically Poisson with constant mean. Their proof, however, only applies to the special case $d=2$ where the components of the evolving graph are either paths or cycles. We generalize this result to all $d \geq 2$. We do this by exploiting the fact that the random d-process is a time-evolving process and by using switching arguments on an easier version of the process.