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Bandwidth-aware energy efficient flow scheduling with SDN in data center networks

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***Highlights (for review)**

- We describe the energy efficiency problem of network-constrained network flows with the requirement of deadline in DCN and model this problem as a linear programming;
- Furthermore, we propose a bandwidth-aware energy efficient routing algorithm with SDN to solve the problem;
- With simulations in OMNeT++, we evaluate our algorithm and show that our algorithm can achieve higher energy efficiency and lower completion time in Fat-Tree and BCube topologies.