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Daniel Grieser* (grieser@mathematik.uni-oldenburg.de), Institut fuer Mathematik, Carl von Ossietzky Universitaet Oldenburg, D-26111 Oldenburg, Germany. *Eigenvalue estimates, isoperimetric inequalities and flows in networks.*

We give a new way of looking at Cheeger's inequality which gives a lower bound for the first eigenvalue of the Laplacian. This involves a continuous analogue of the classical max flow min cut theorem in discrete network theory. This gives a new proof of Cheeger's inequality and of the Hayman/Osserman inequality which bounds the first Dirichlet eigenvalue of a plane simply connected domain from below in terms of the inradius. (Received February 07, 2006)