

Abstract Submitted
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Thermoelectric Properties of a Nanocontact KEIVAN ESFARJANI,
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Tehran, Iran — Thermoelectric properties of a nanocontact made of two capped
single wall carbon nanotubes (SWCNT) are calculated within the tight-binding ap-
proximation and by using Green's function method. It is found that doped semicon-
ducting nanotubes can have high Seebeck coefficients. This in turn leads to very high
figures of merit (ZT) for p-doped tubes which turn out to have also a large electrical
to thermal conductivity ratio. Transport in the nanocontact device is dominated by
quantum interference effects, and thus it can be tuned by doping (charge transfer
and/or impurity potential) or application of a (nano-)gate voltage, or a magnetic
field. Another reason for high ZT in this device is the absence of phonon transport
as there is barely a contact between the two sides.

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