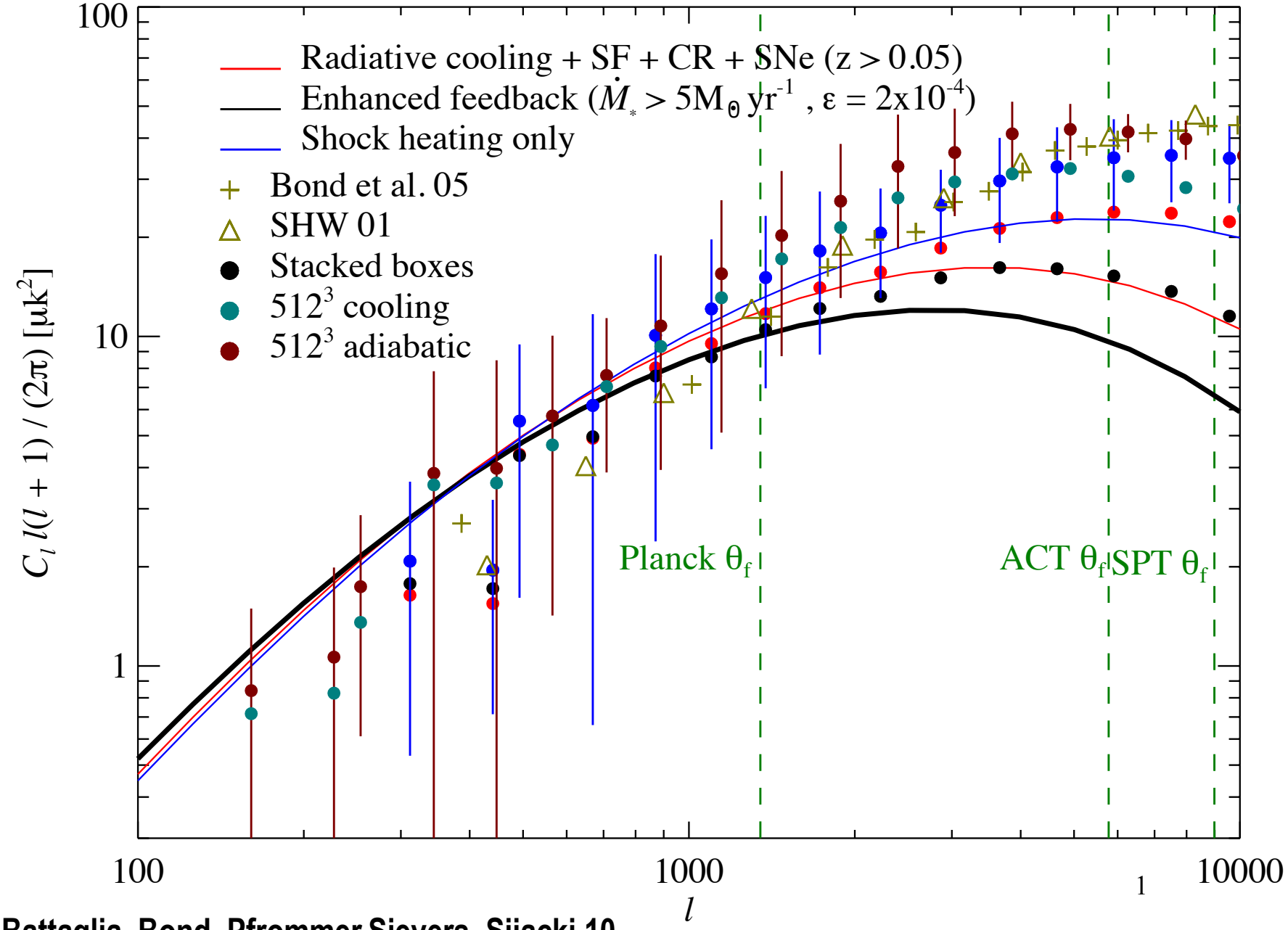
C_L^{SZ} & σ_8^{SZ} theoretical uncertainties & impact on ACT



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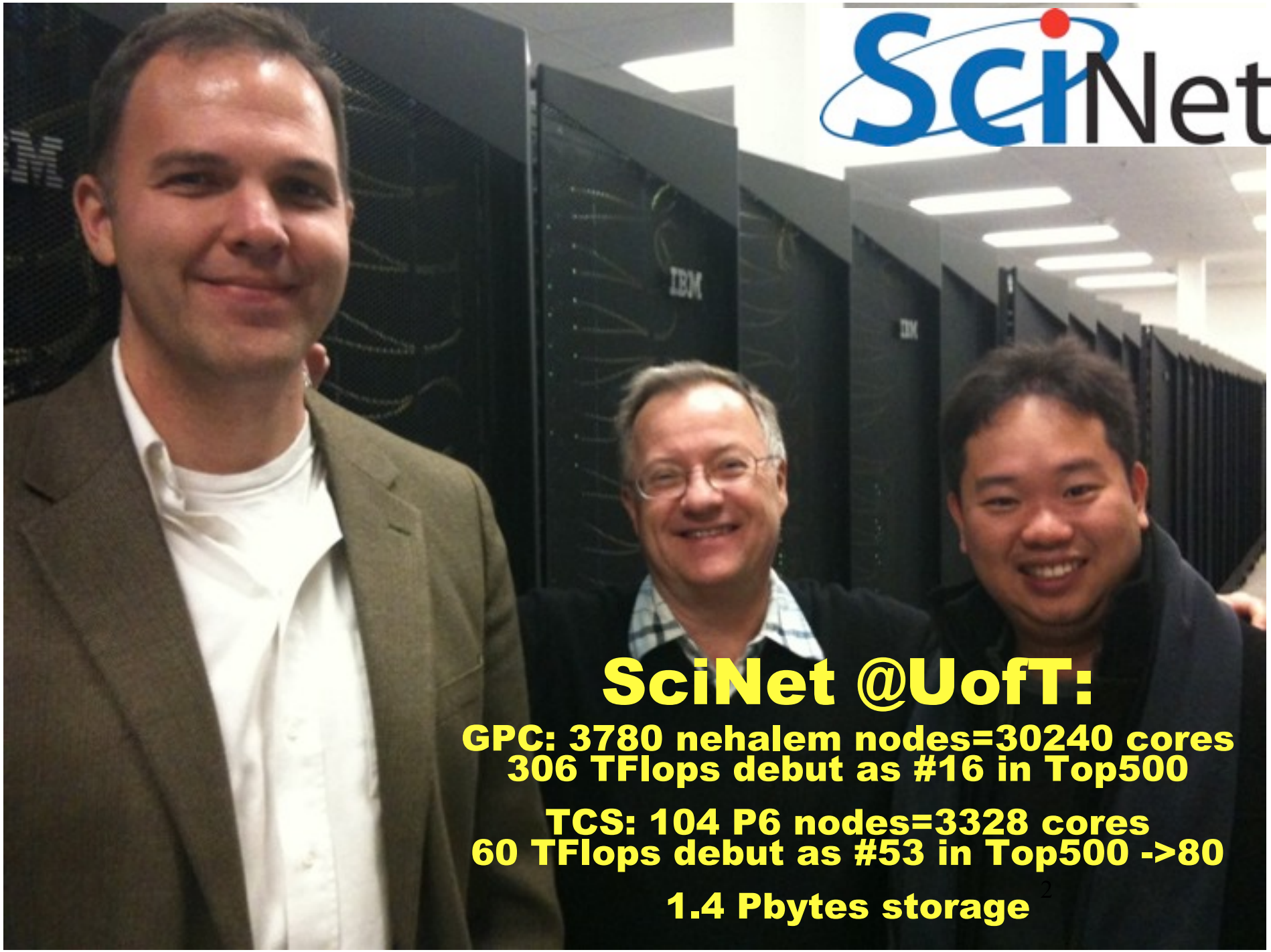

SciNet
SciNet @UofT:
GPC: 3780 nehalem nodes=30240 cores
306 TFlops debut as #16 in Top500
TCS: 104 P6 nodes=3328 cores
60 TFlops debut as #53 in Top500 ->80
1.4 Pbytes storage

400 Mpc

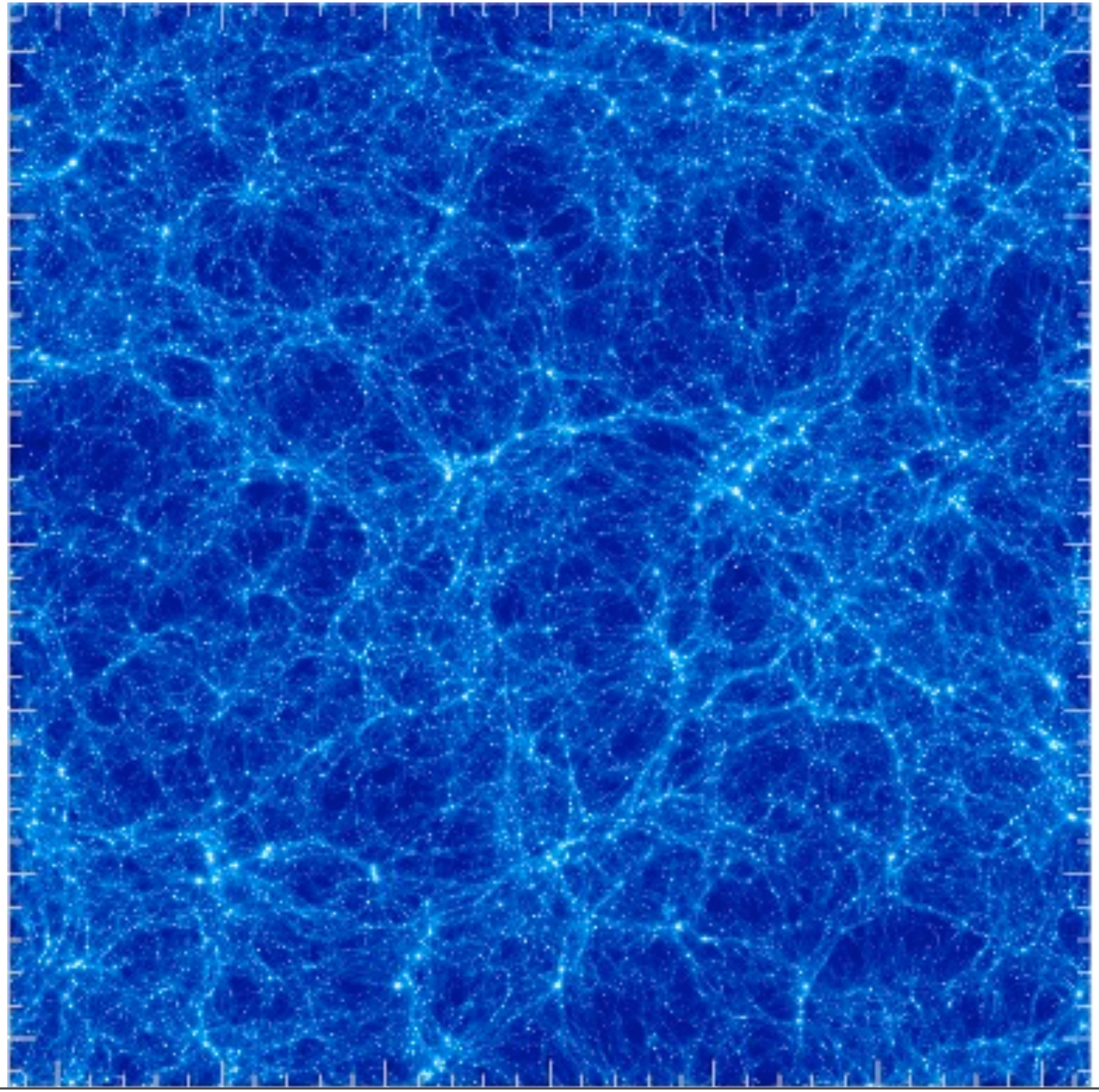
ΛCDM

WMAP5

gas density

Gadget-3 SF+ SN E+ winds +CRs

512^3



400 Mpc

ΛCDM

WMAP5

gas pressure

Gadget-3 SF+ SN E+ winds +CRs

512^3

400 Mpc

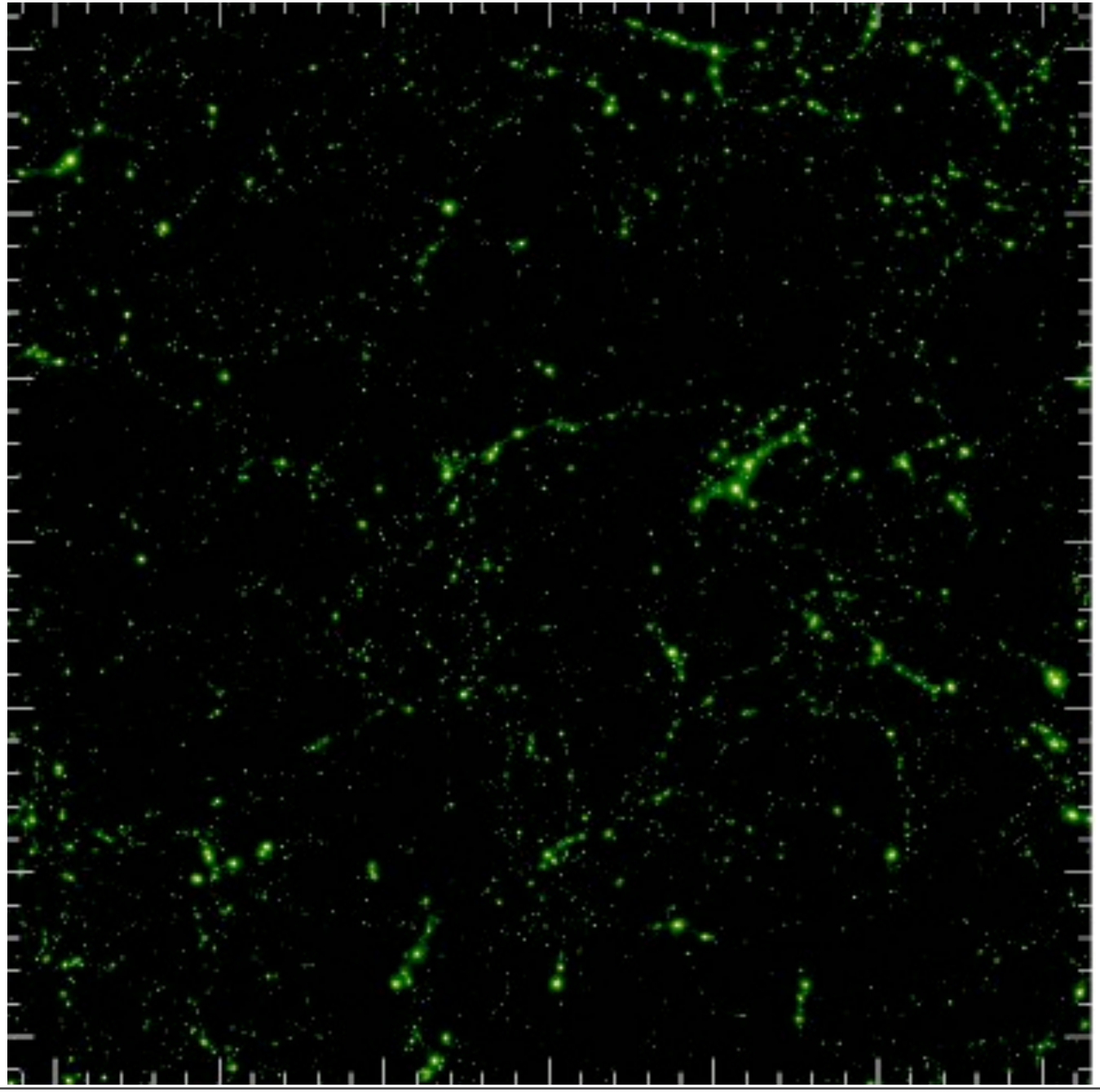
ΛCDM

WMAP5

gas pressure

Gadget-3 SF+ SN E+ winds +CRs

512^3



400 Mpc

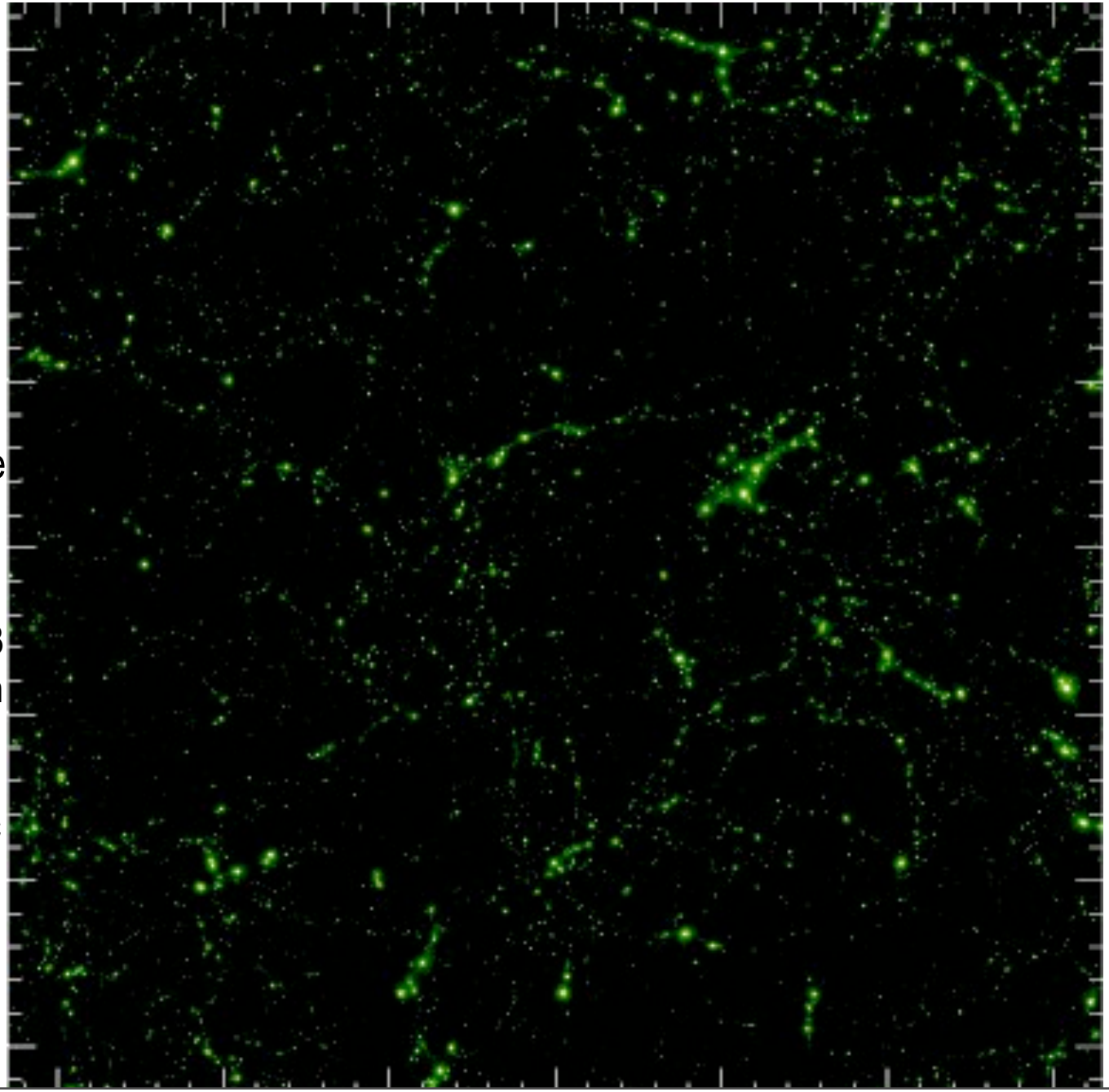
ΛCDM

WMAP5

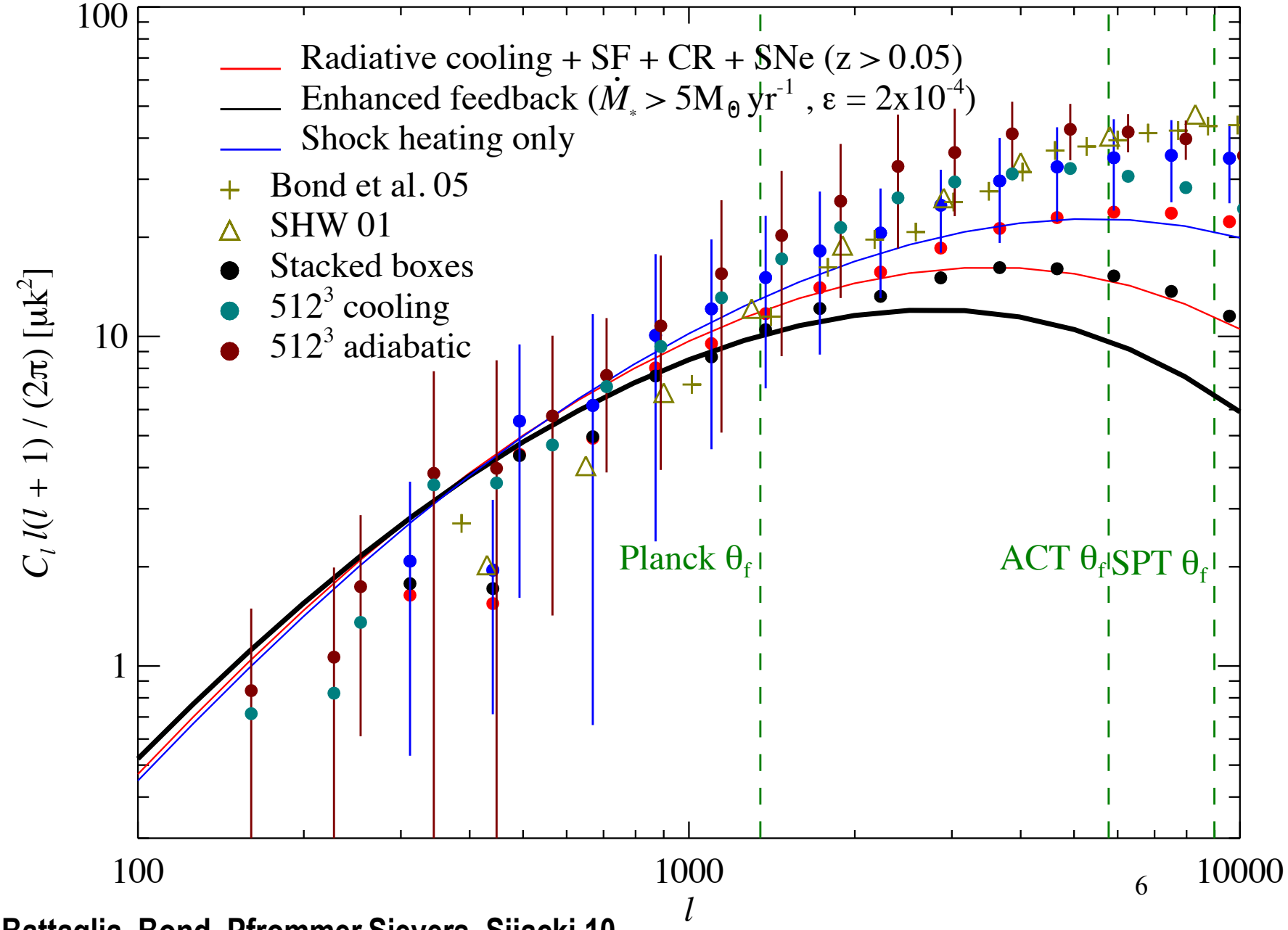
gas pressure

Gadget-3 formation shocks only aka adiabatic

512^3



C_L^{SZ} systematic uncertainties, via large computer simulations



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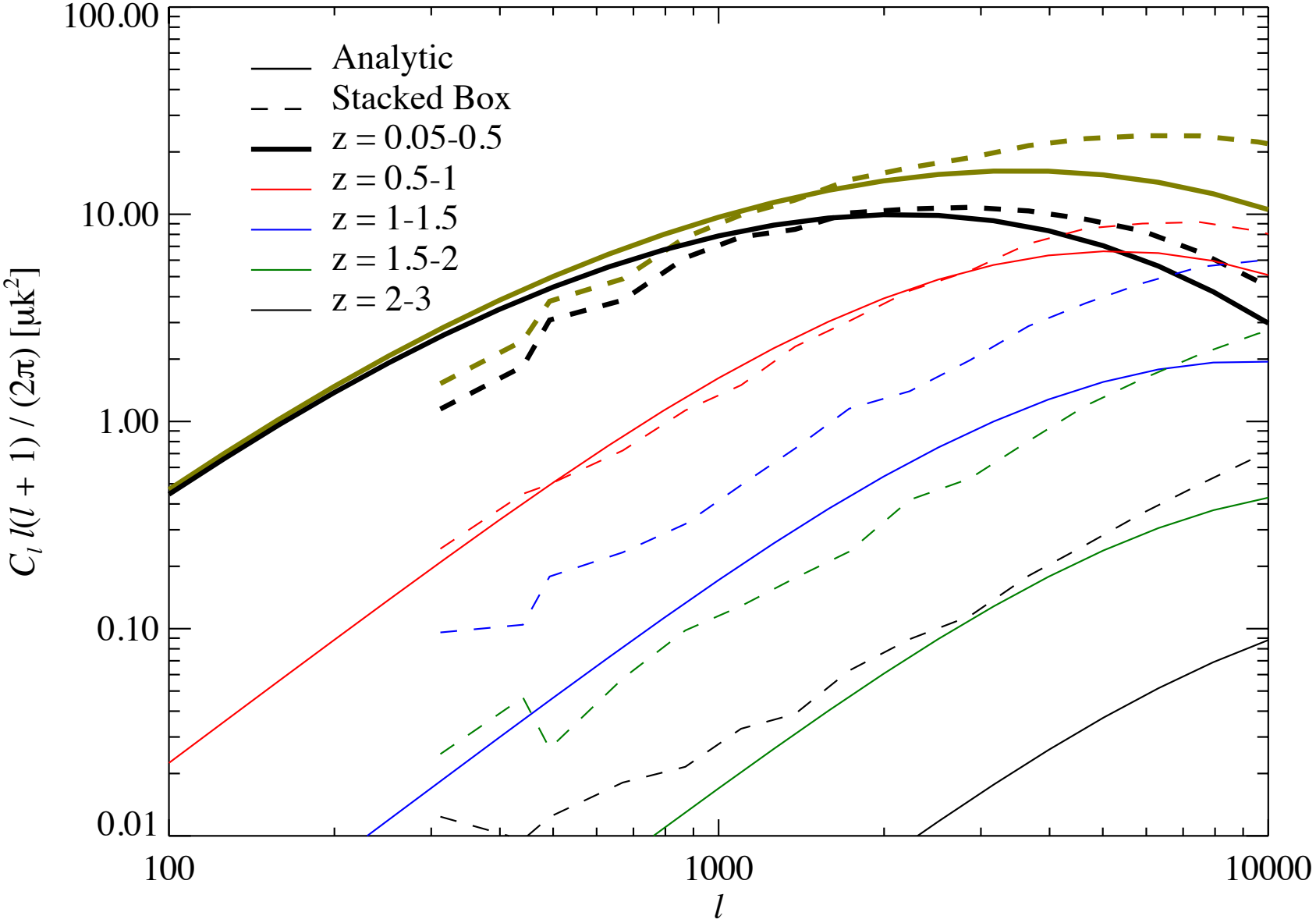
C_L^{SZ} systematic uncertainties, stacked clusters cf stacked boxes



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C_L^{SZ} systematic uncertainties, effect on σ_8^{SZ} from ACT

$$C_L^{SZ} \sim [\sigma_8^{SZ}]^7 \times \text{SZ template (cosmic parameters)}$$

$\sigma_8^{SZ} <$ .86 @2-sigma for KS

adiabatic SPH gives $\sigma_8^{SZ} < 0.947$

this agrees with the variations depending upon template used in Bond etal 05 CBI, ACBAR. not surprising because the 02 simulations are similar to the 09 simulations, when scaled for WMAP5 parameters, in particular σ_8^{SZ}

AGN feedback+cool+SN-E+CR: $\sigma_8^{SZ} < 1.00$, & mean $\sigma_8^{SZ}=0.90$

a 16% variation in σ_8^{SZ} between KS and hydro sims!!