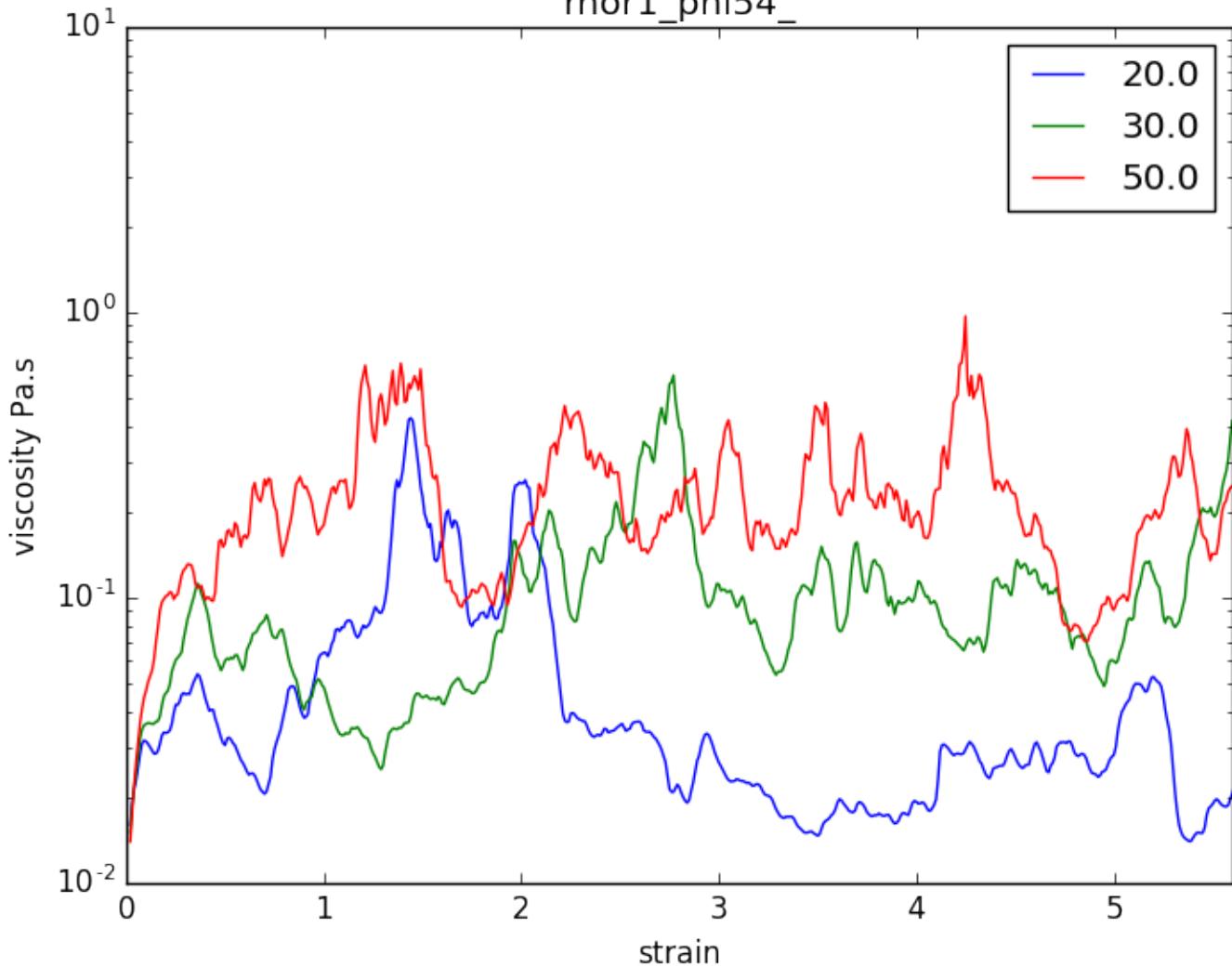
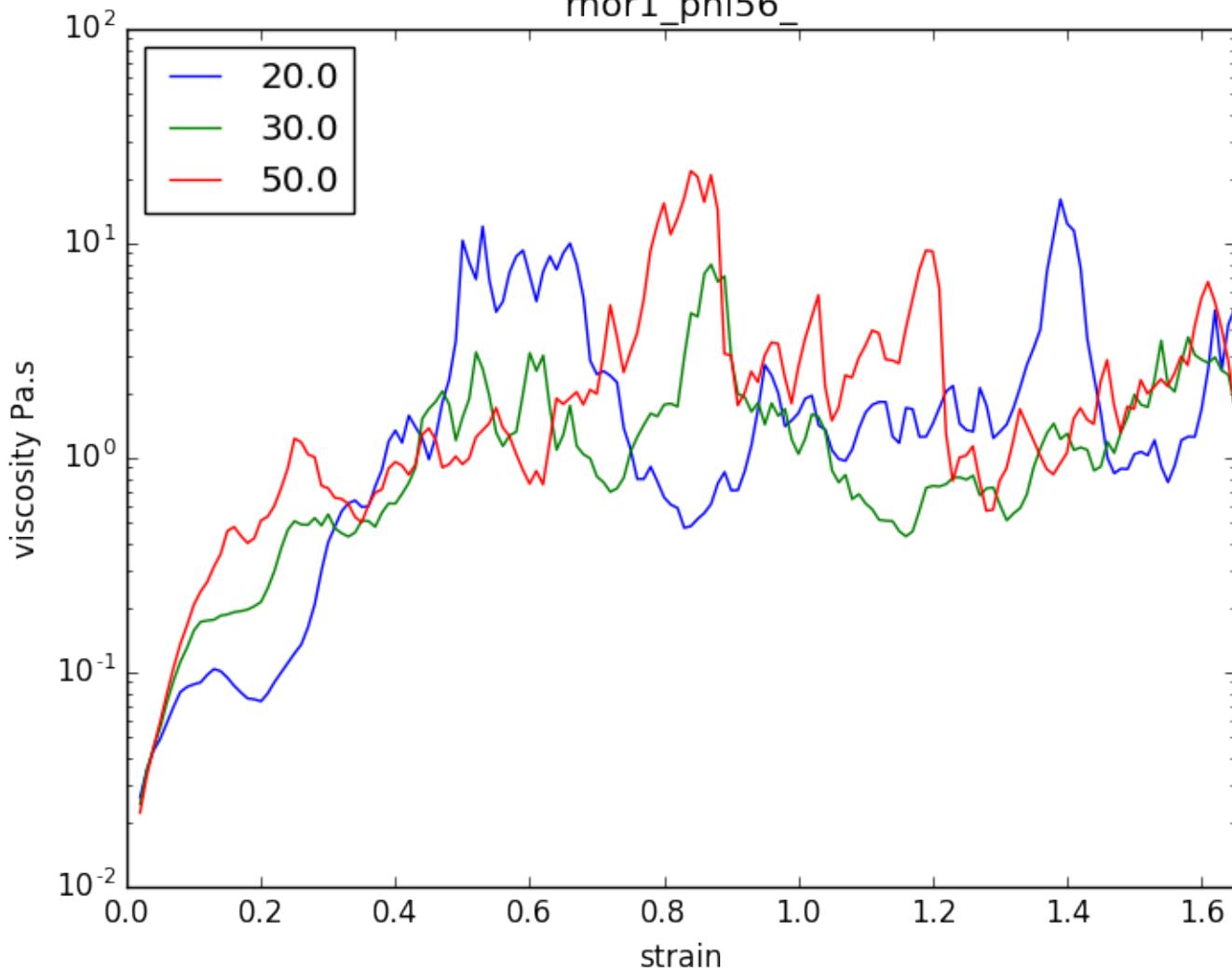


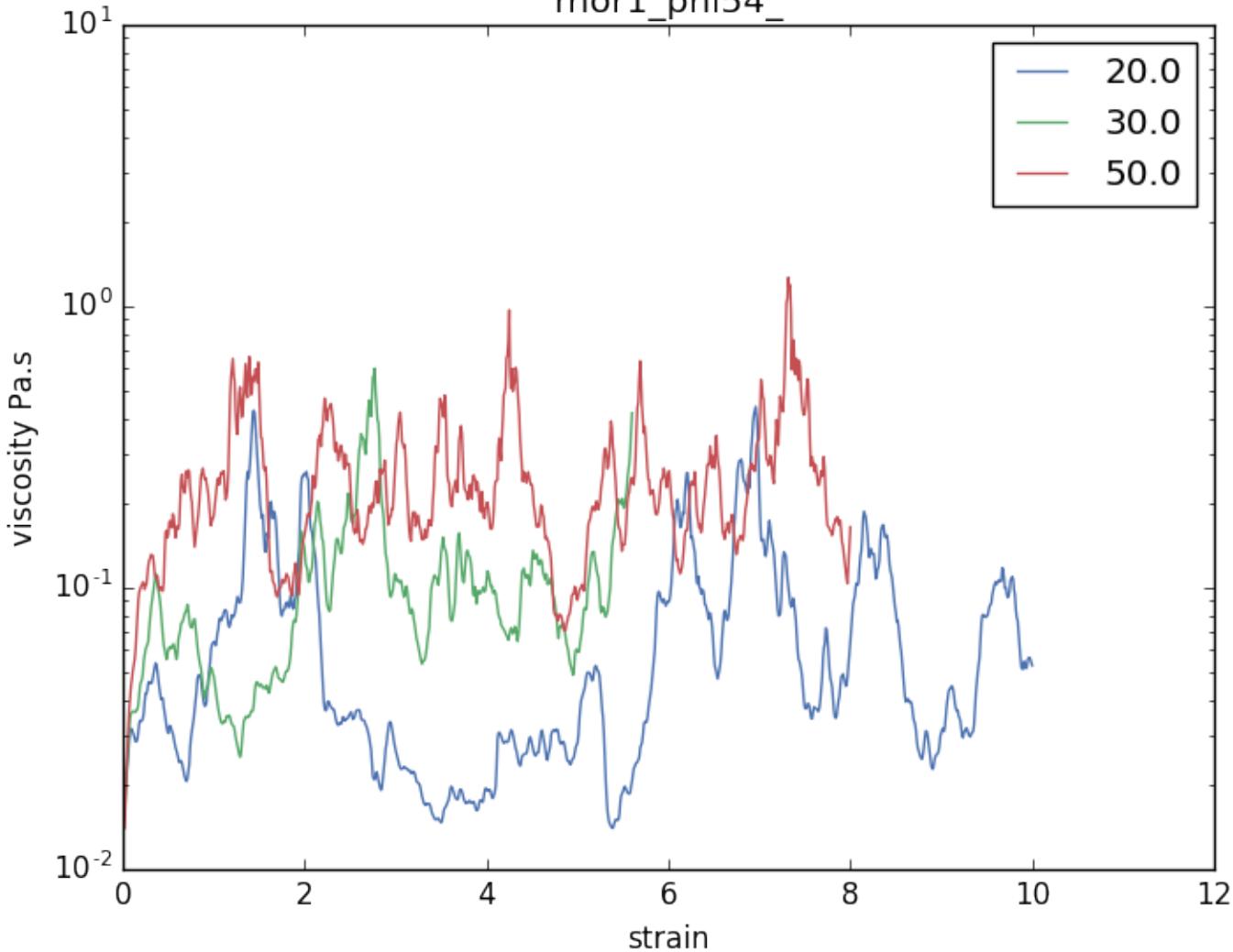
rhor1_phi54_



rhor1_phi56

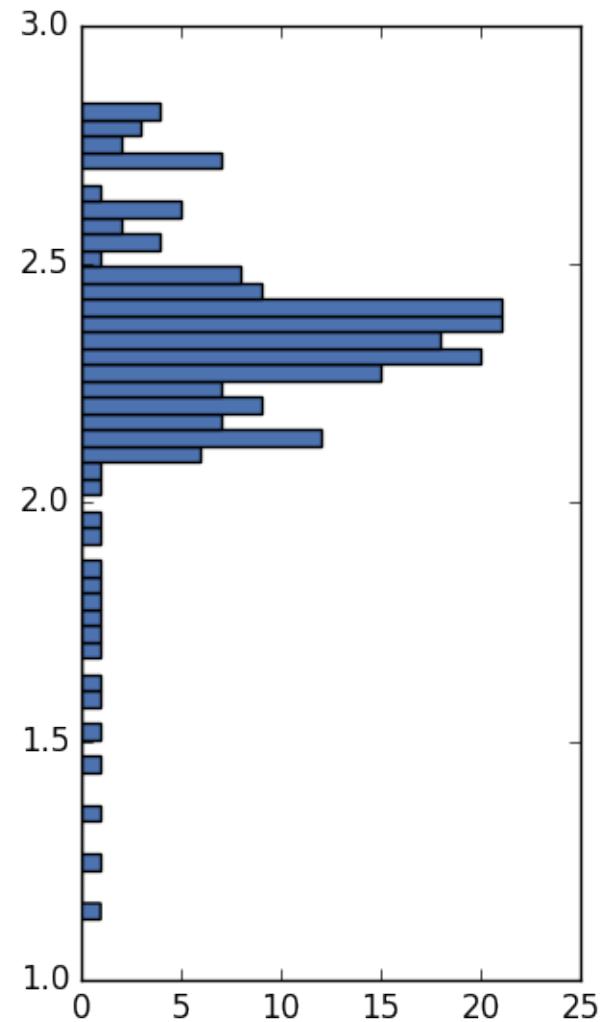
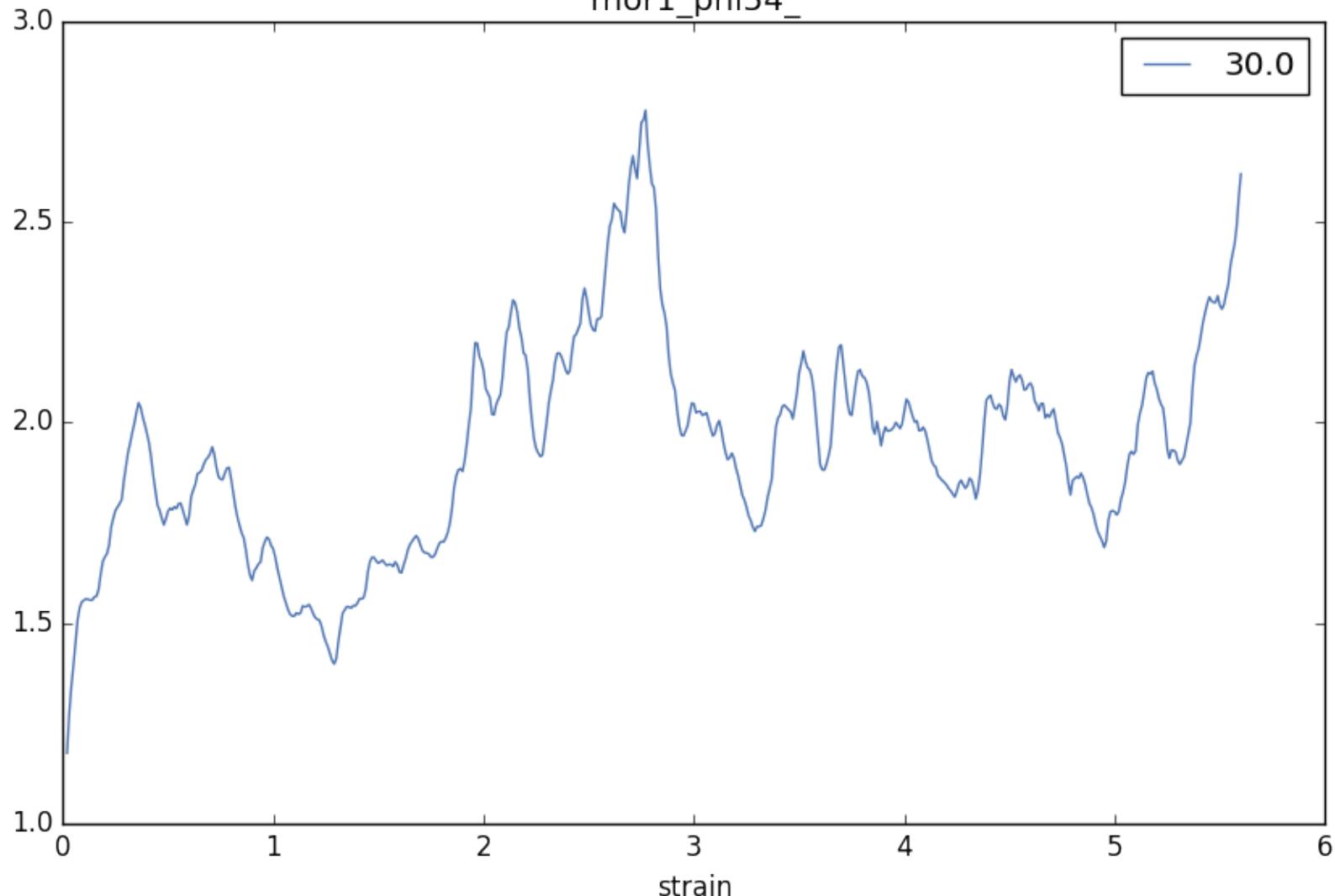


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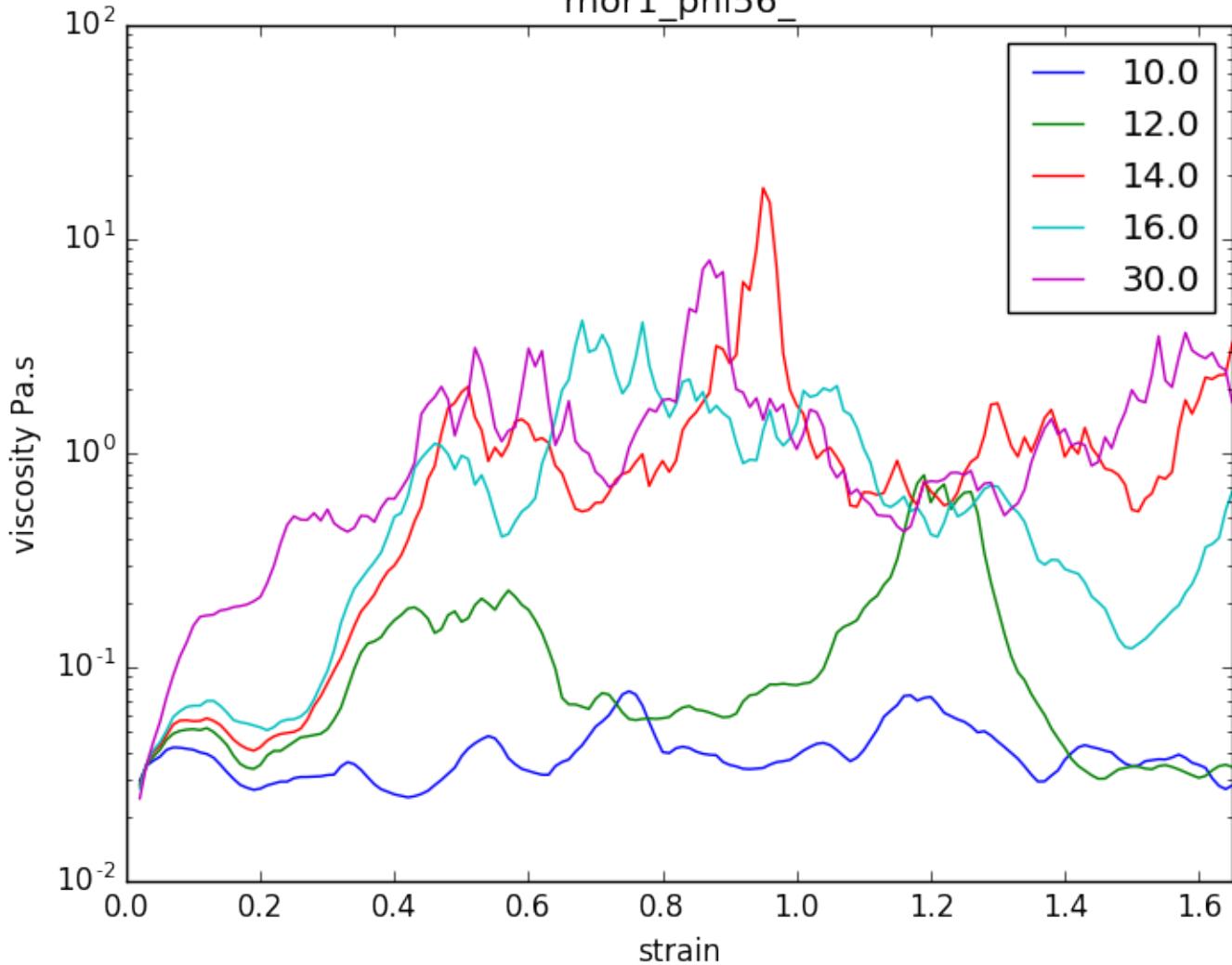


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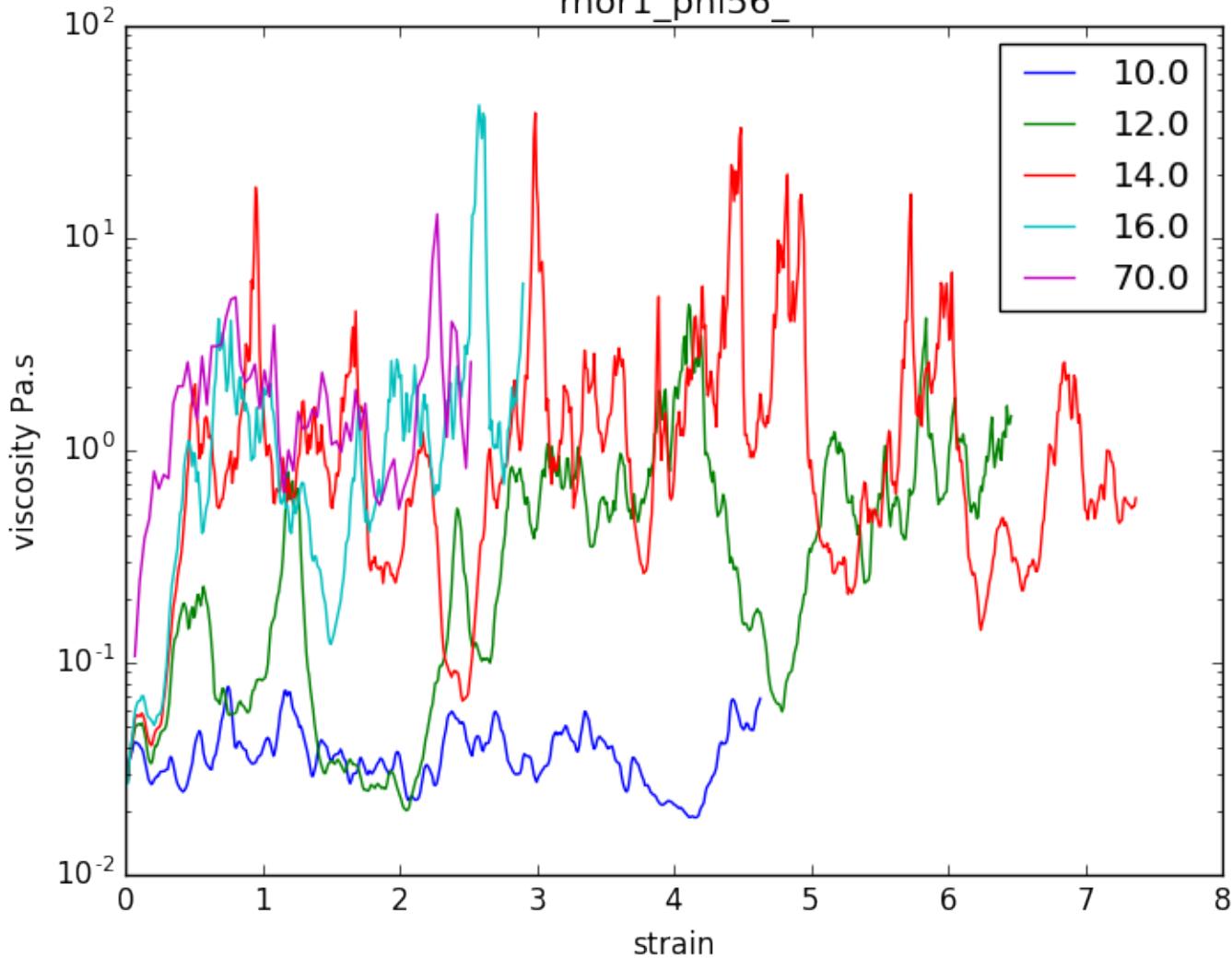
Relative viscosity Pa.s



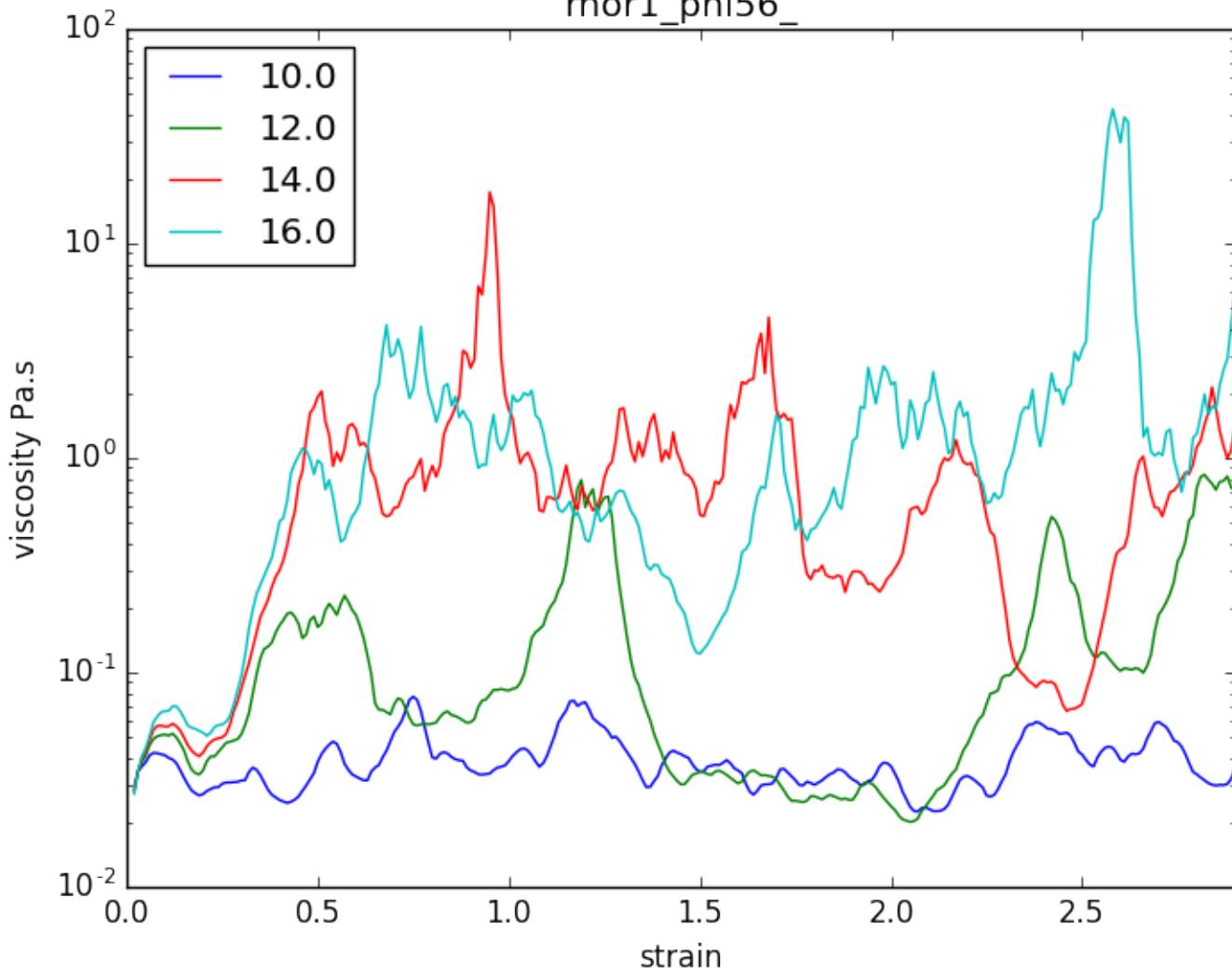
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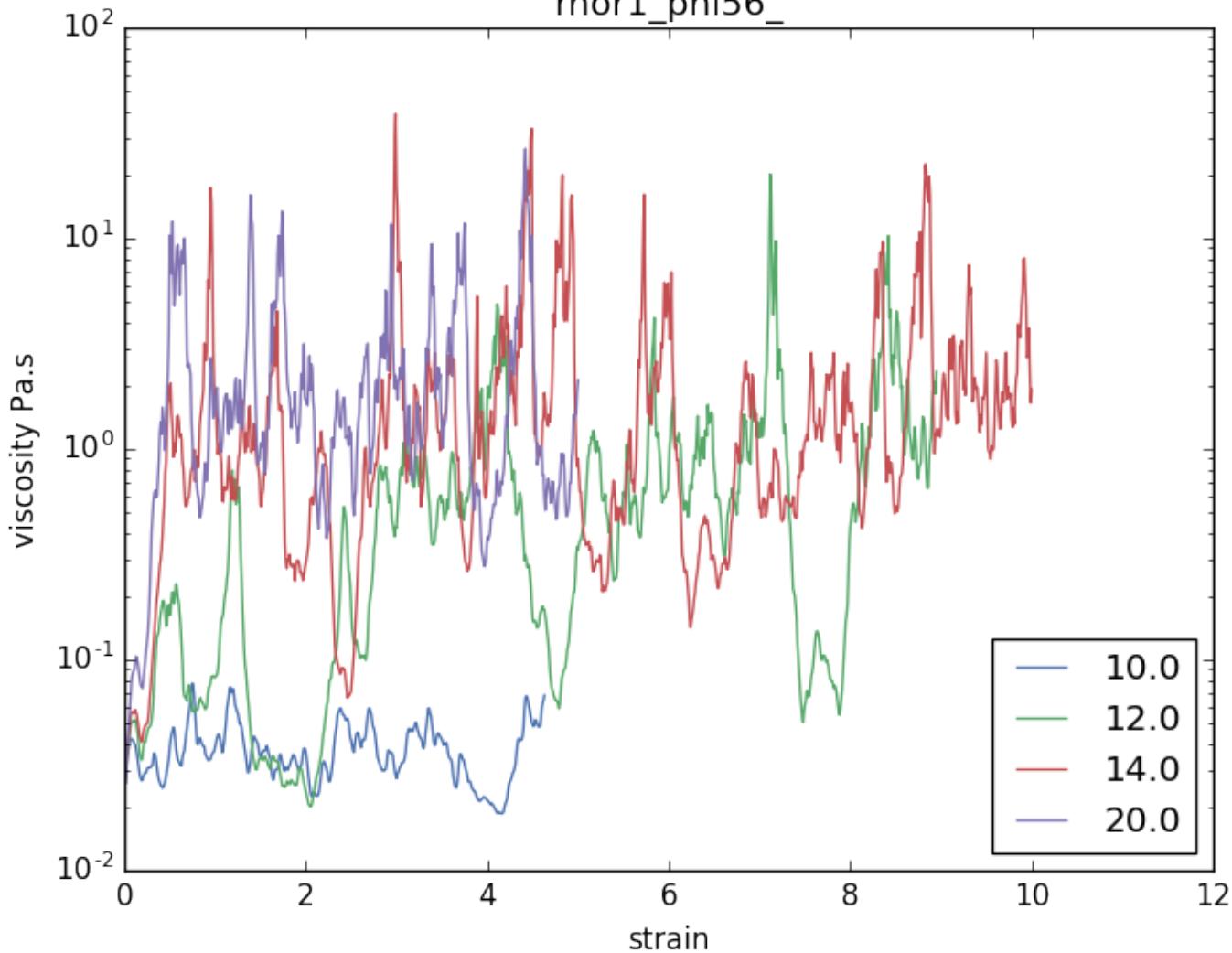
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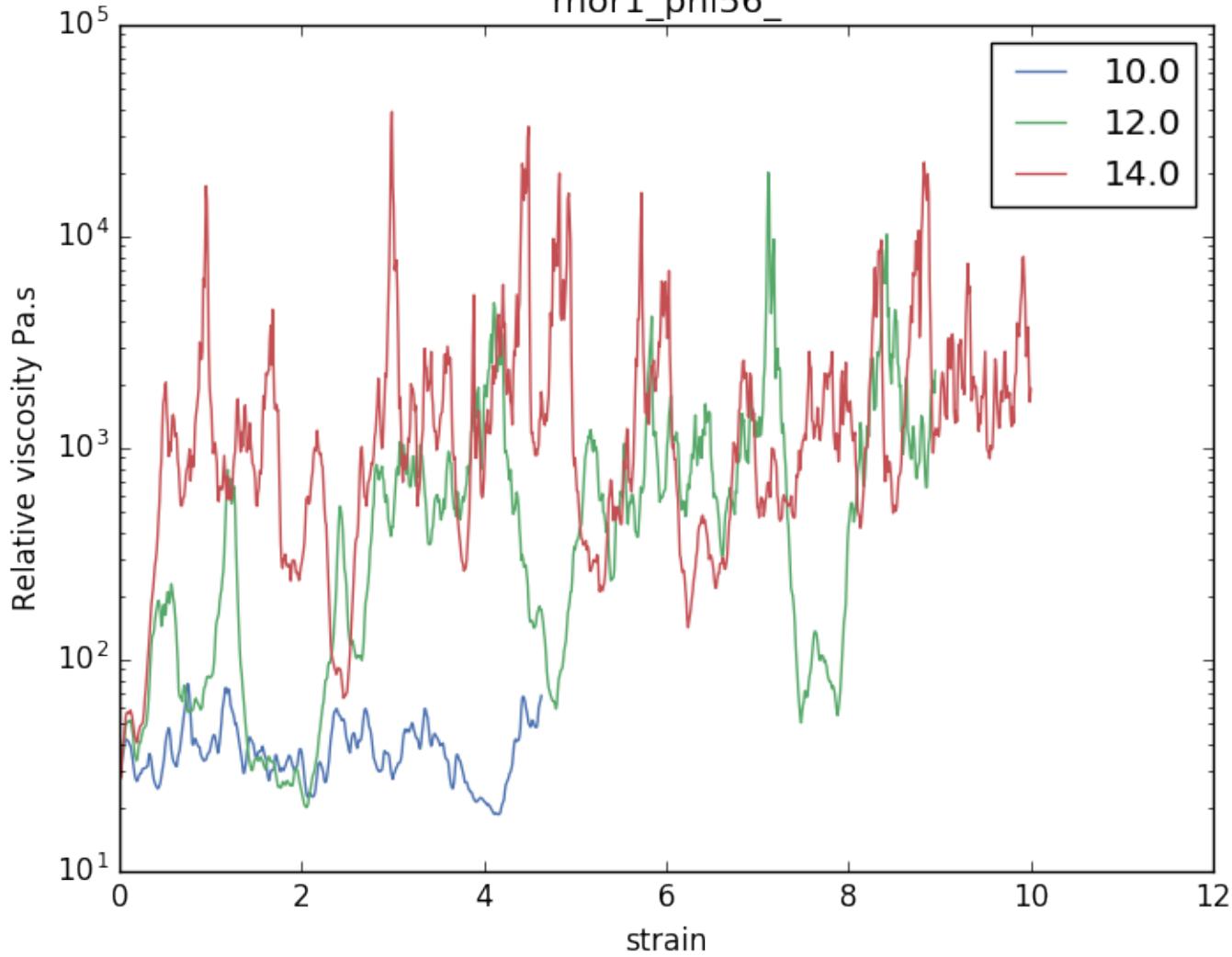
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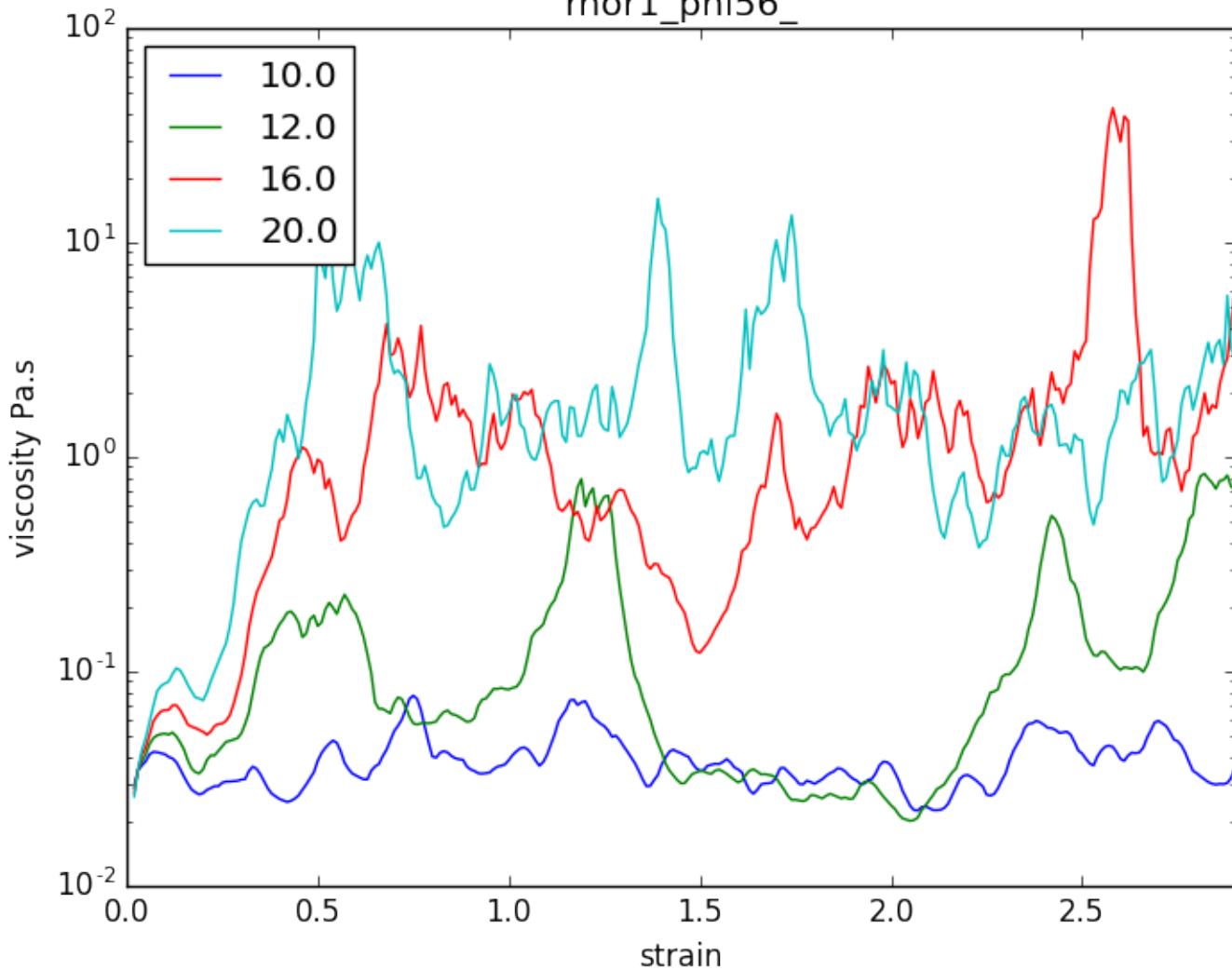
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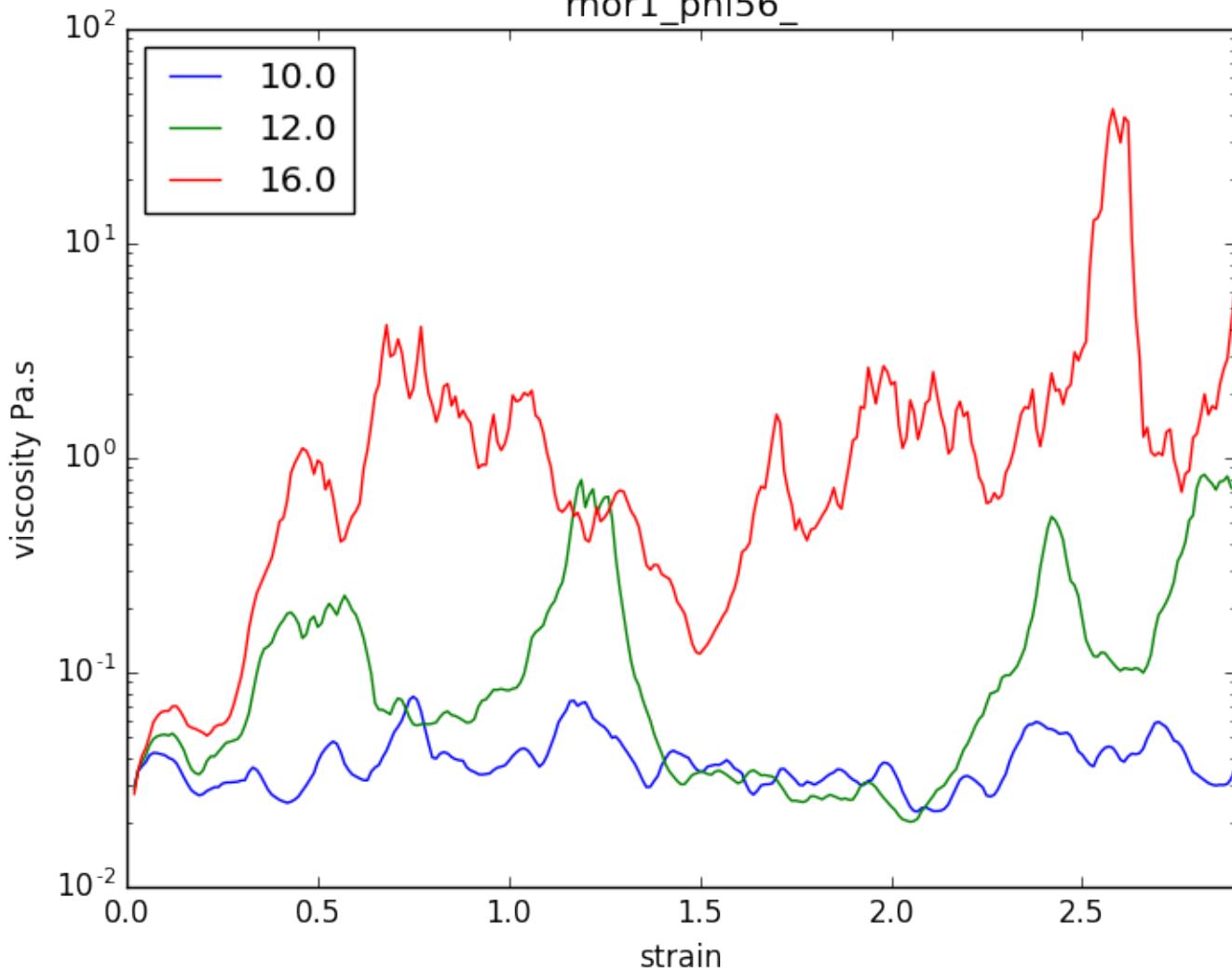
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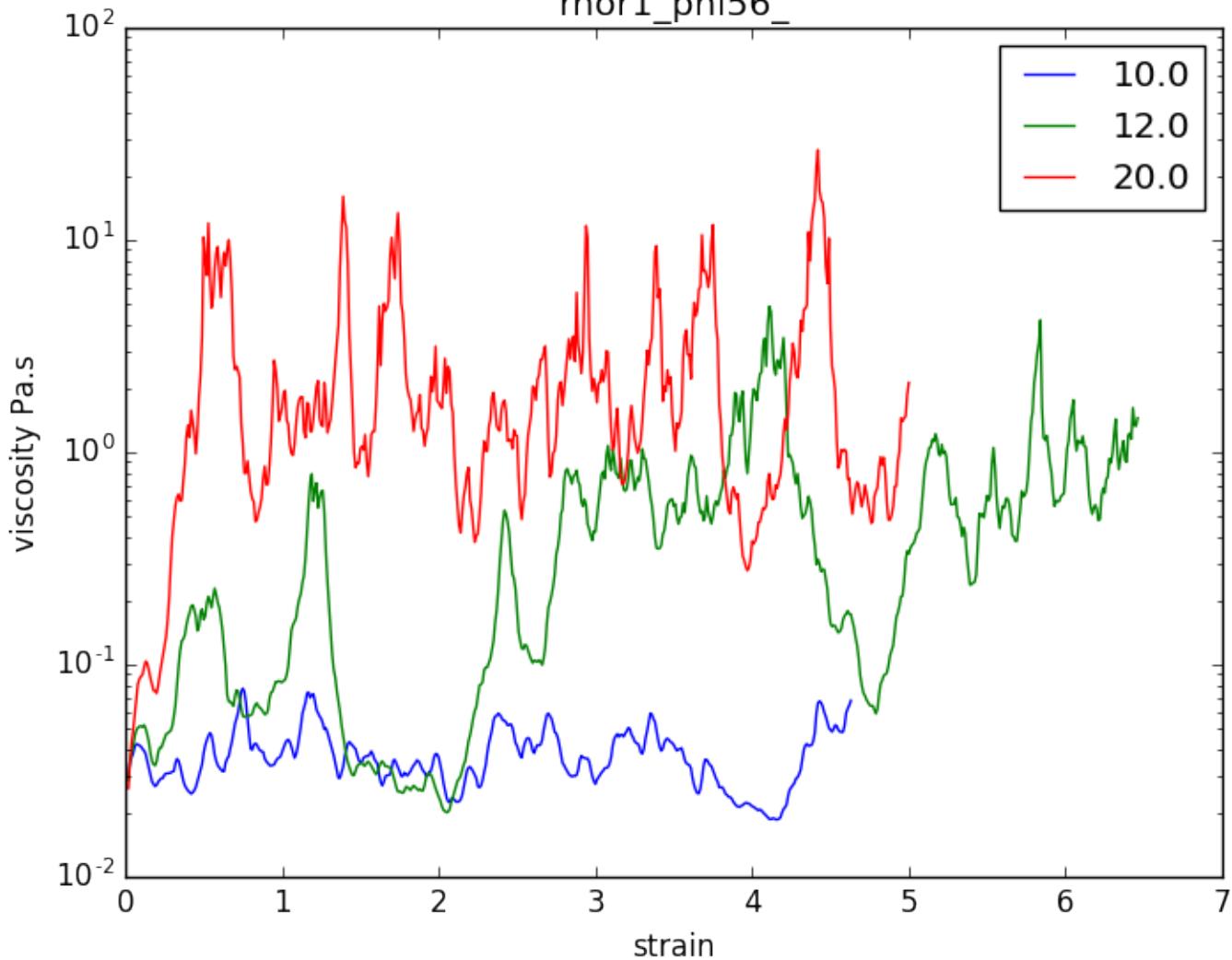
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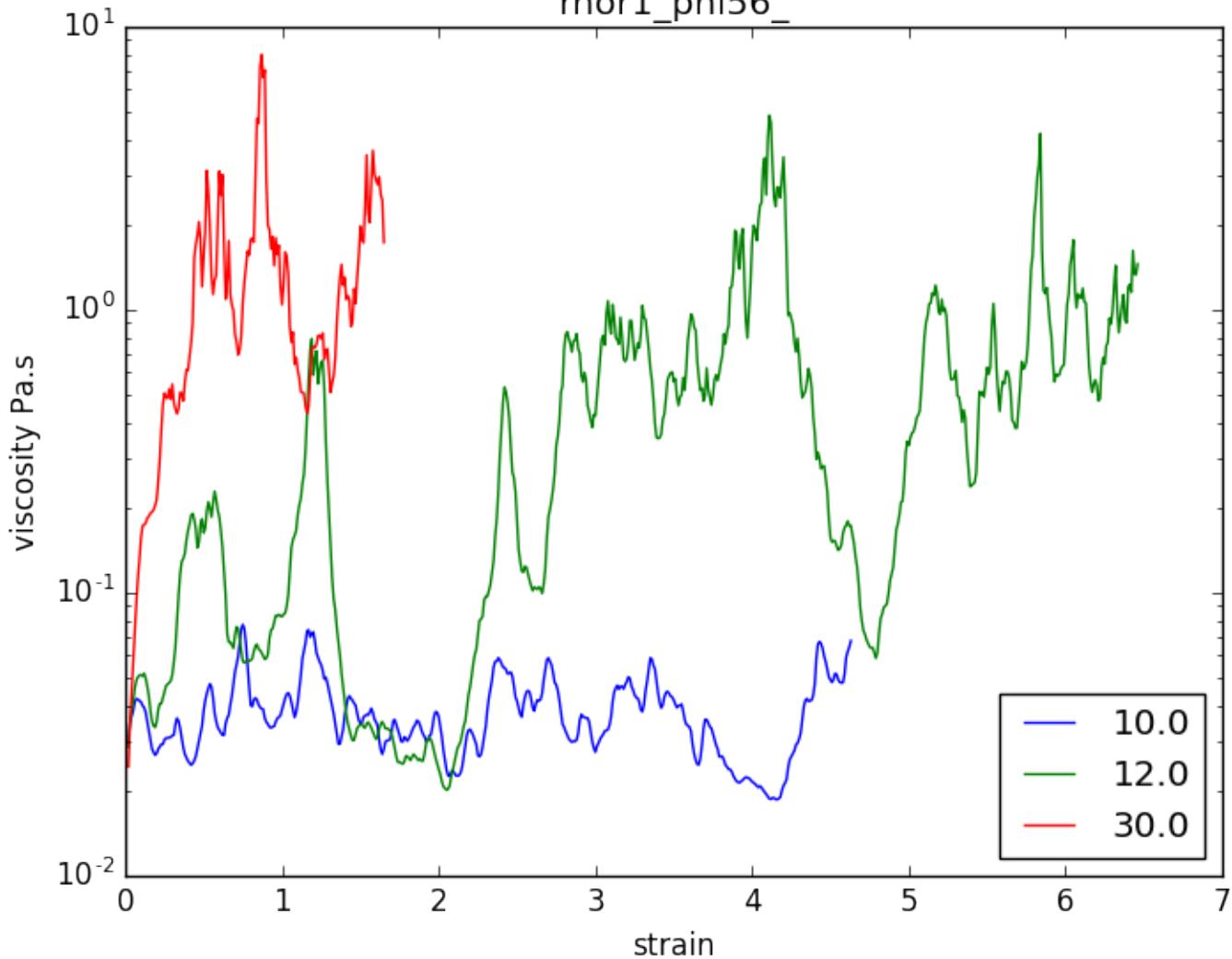
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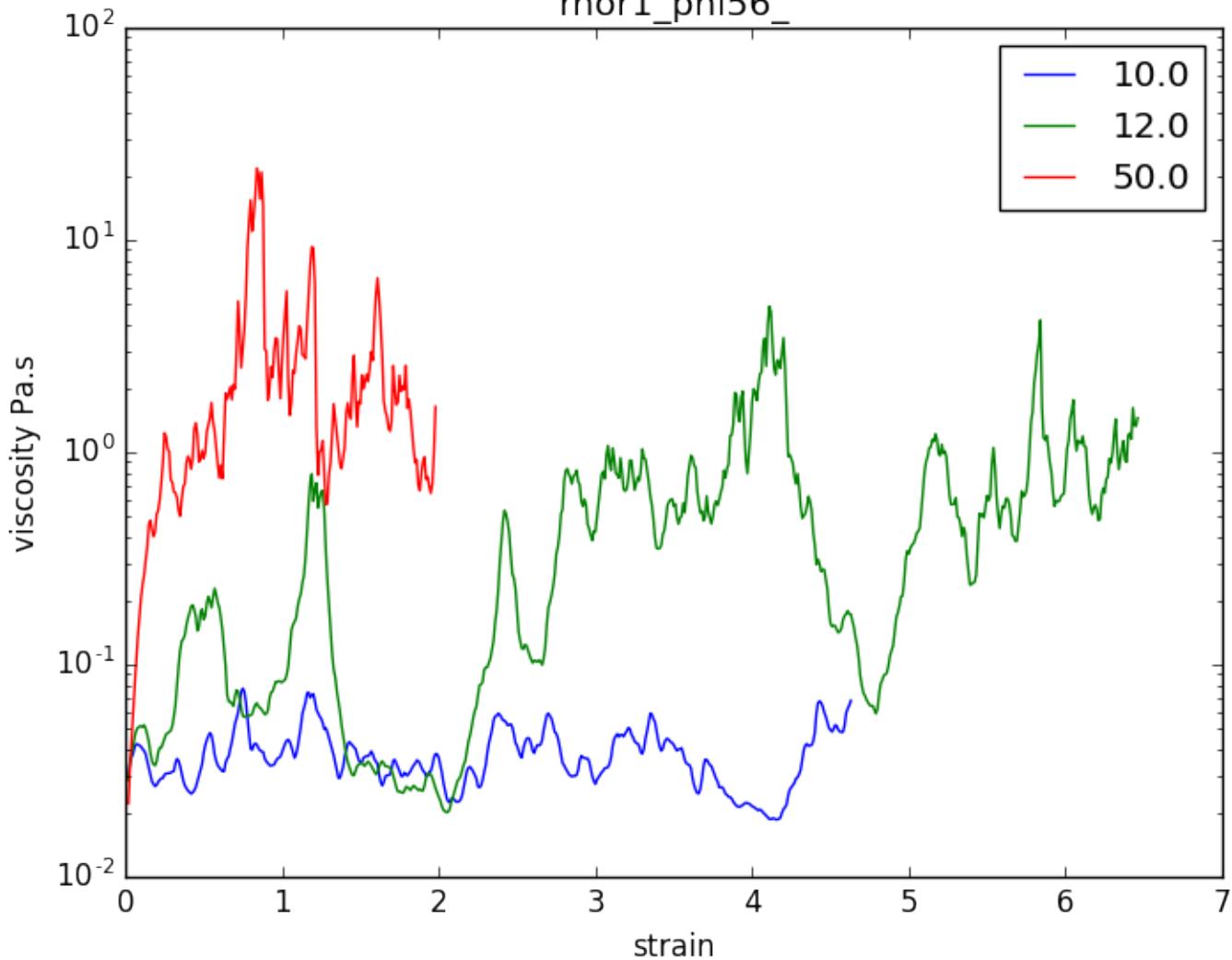
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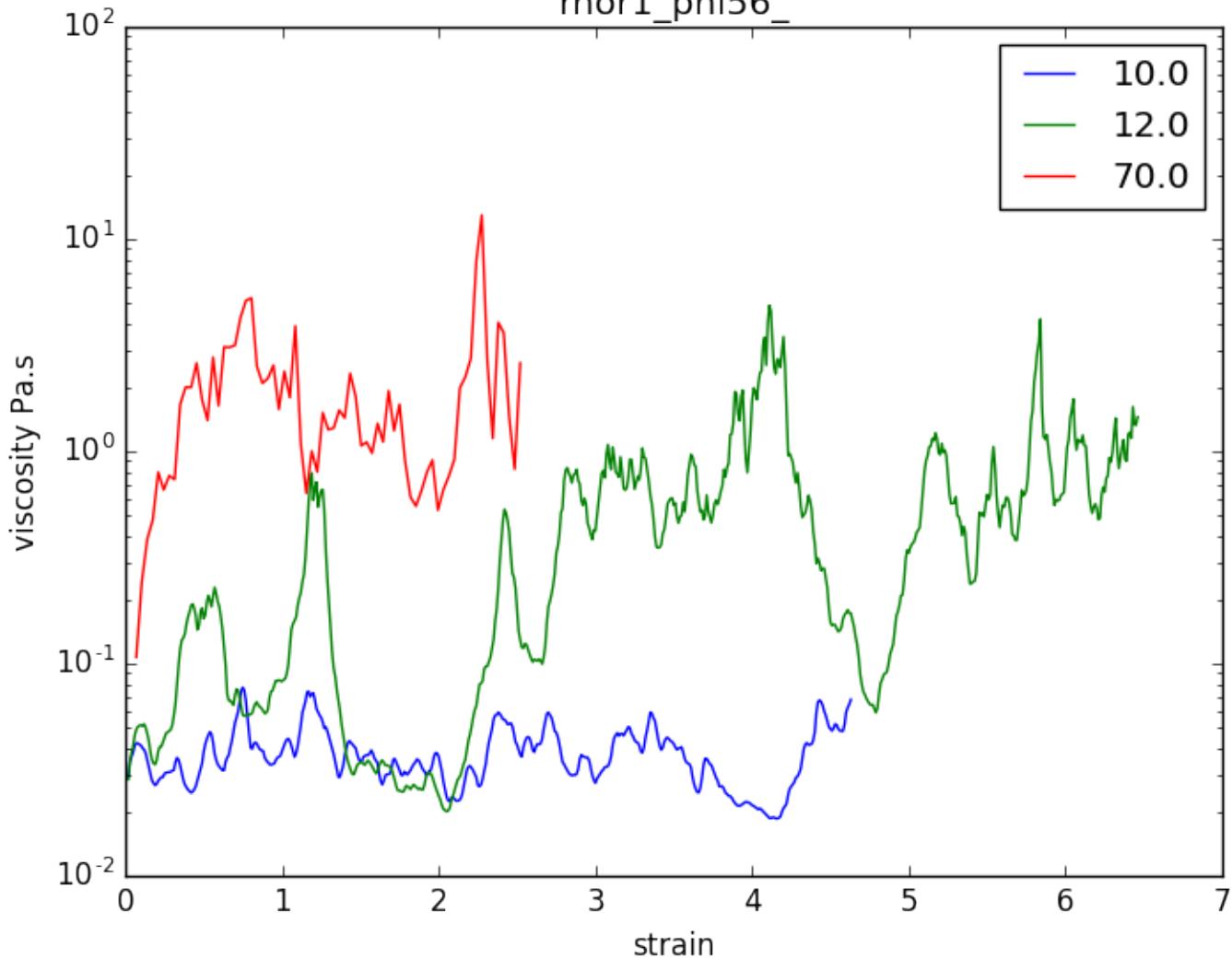
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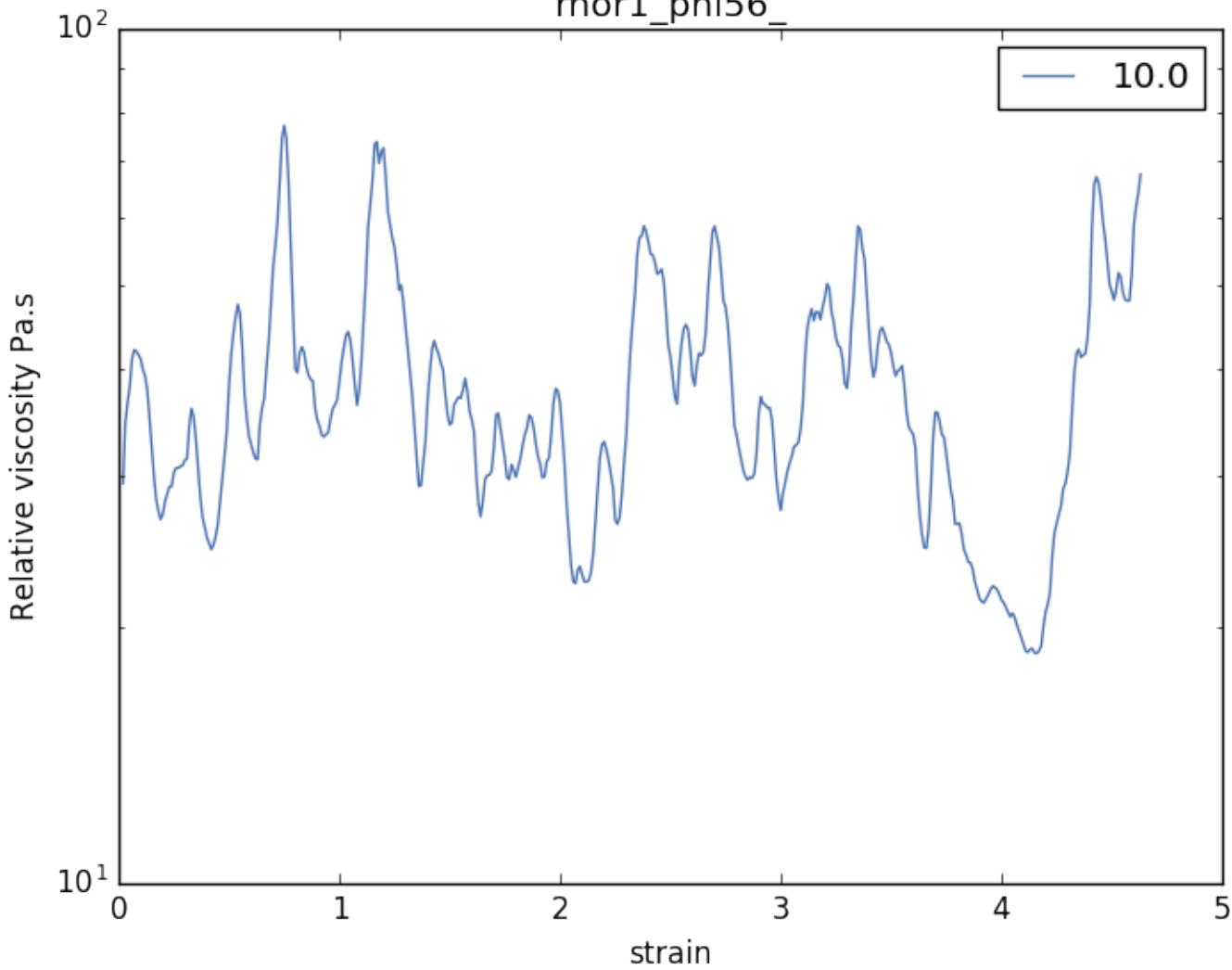
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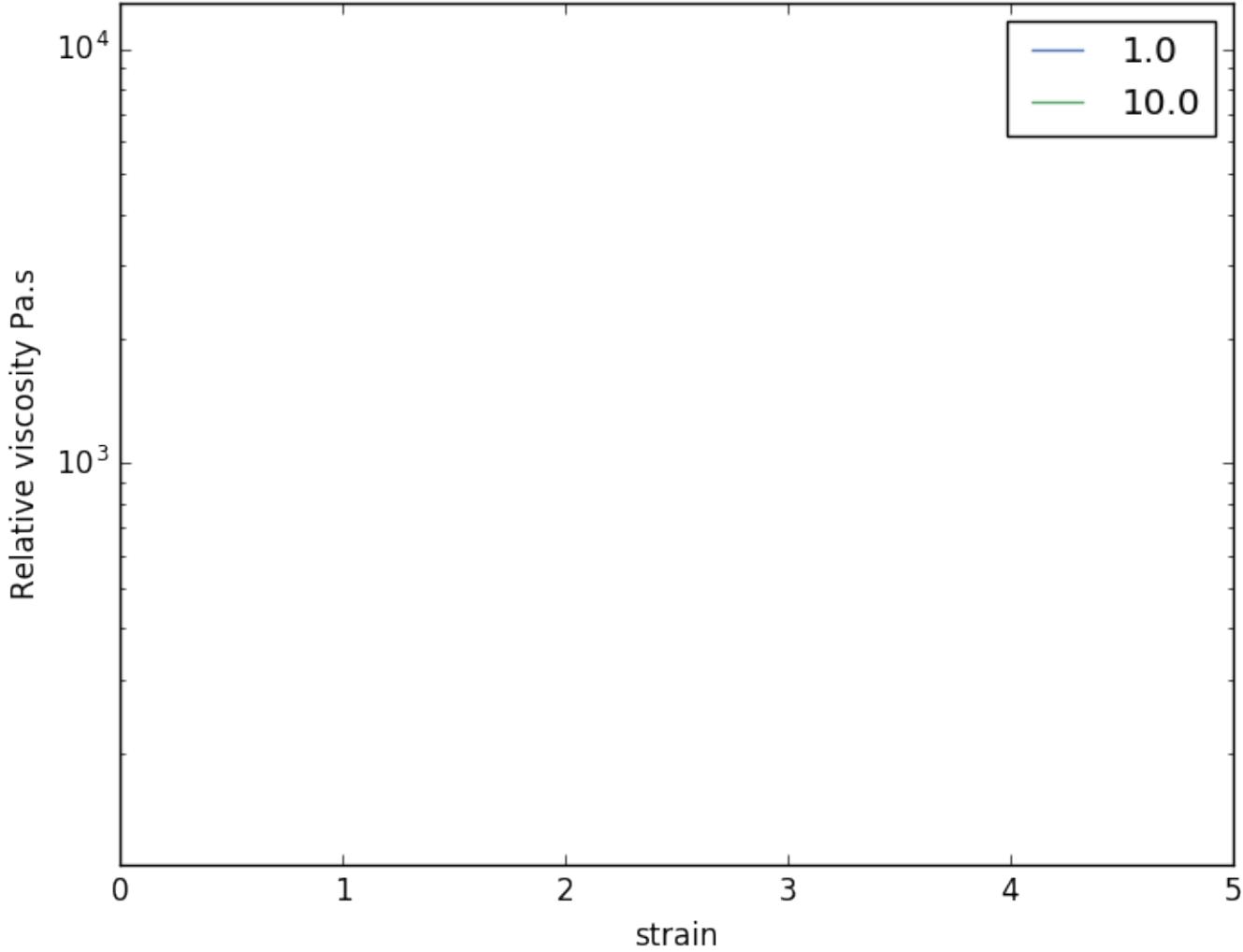
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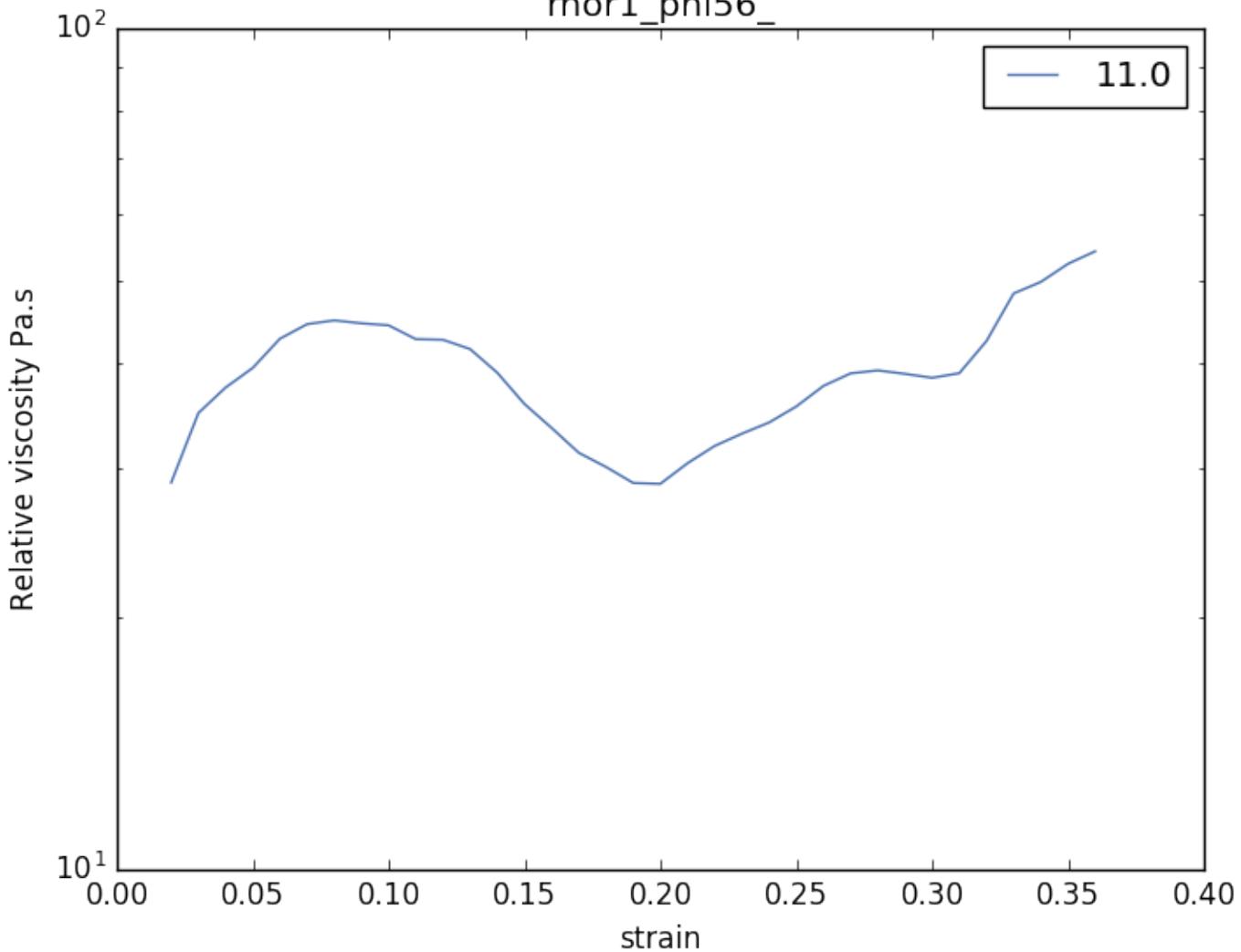
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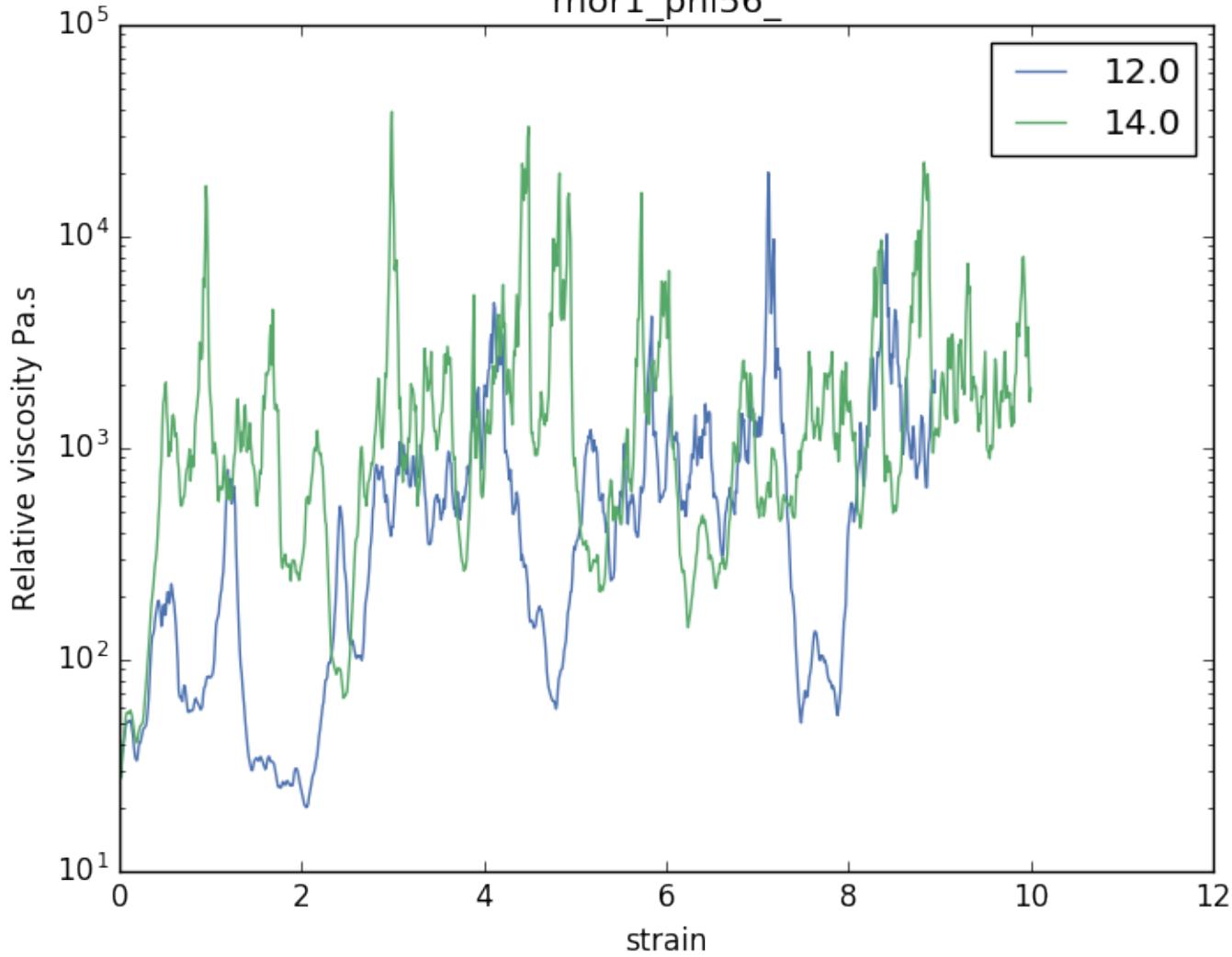
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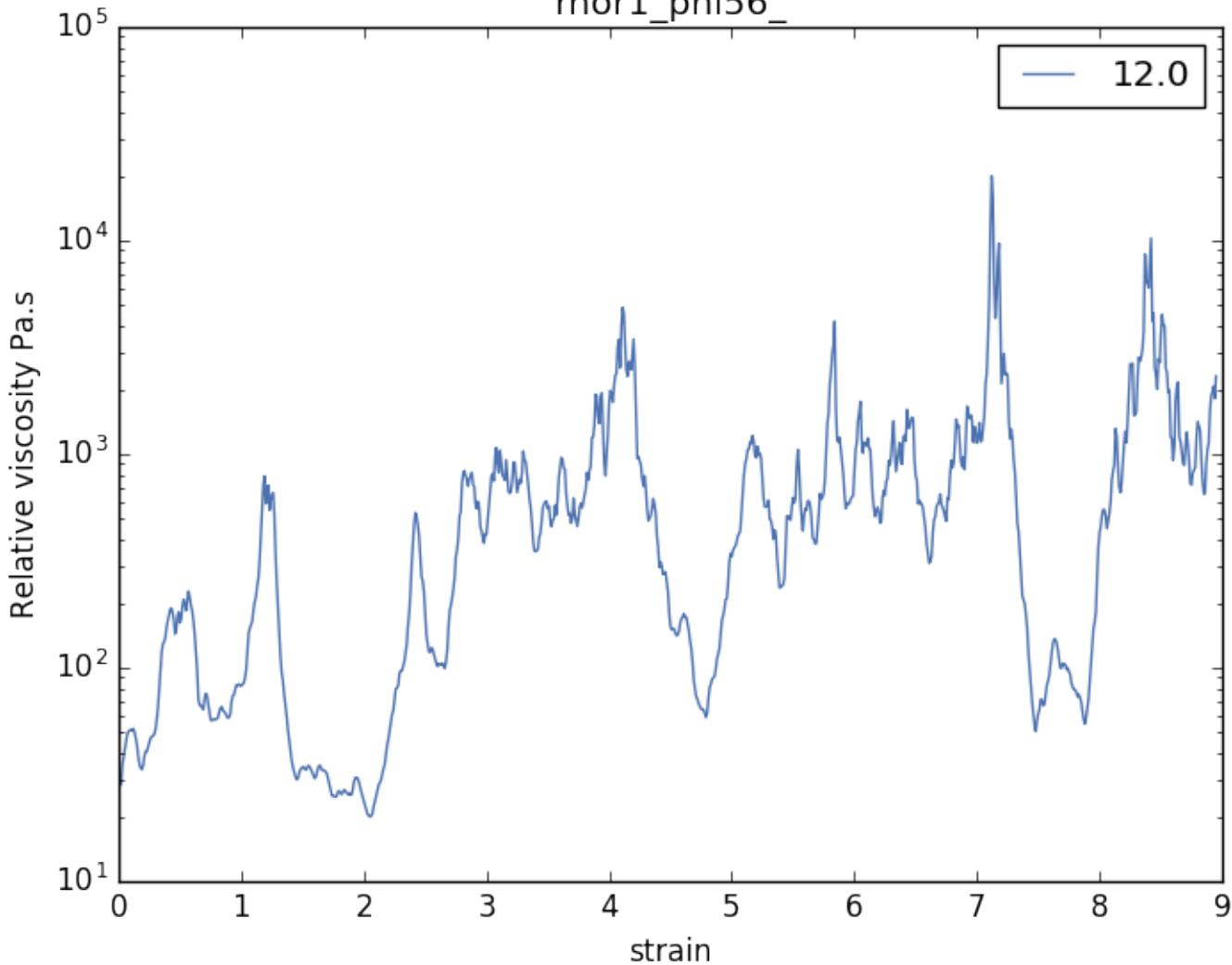
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rhor1_phi56

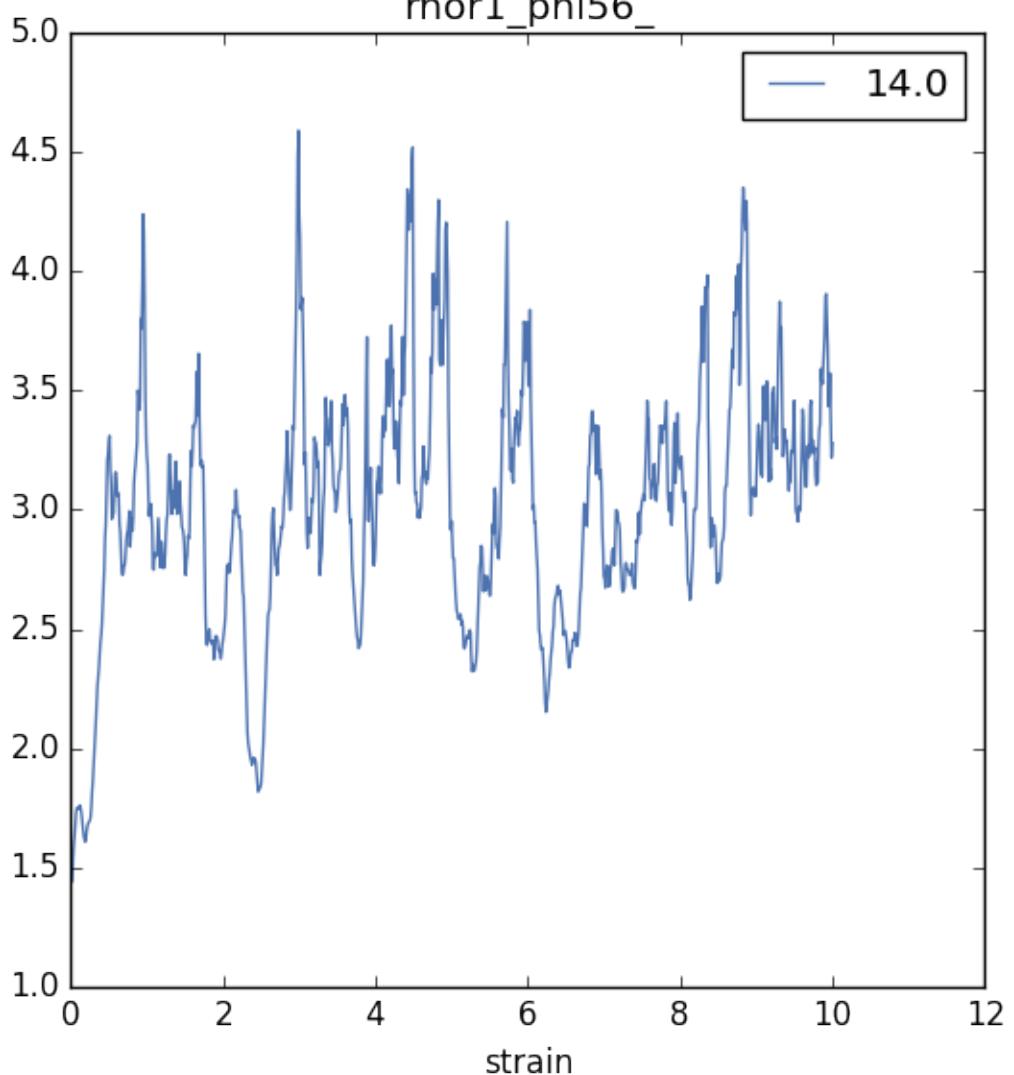


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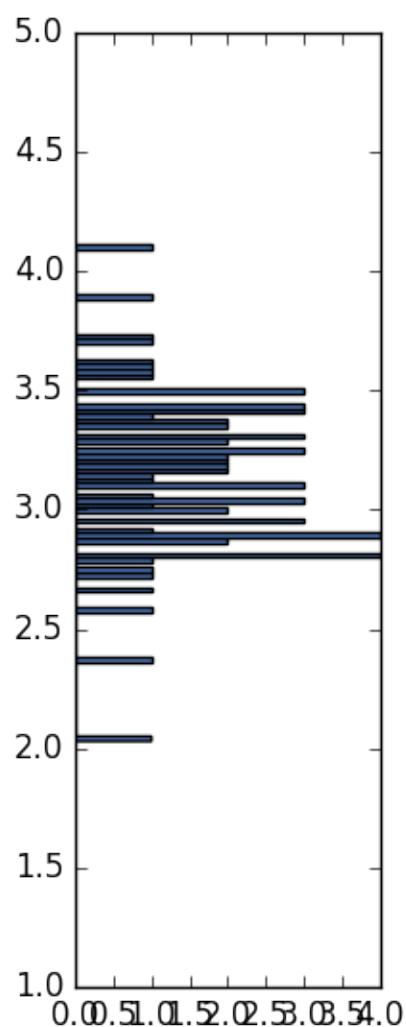


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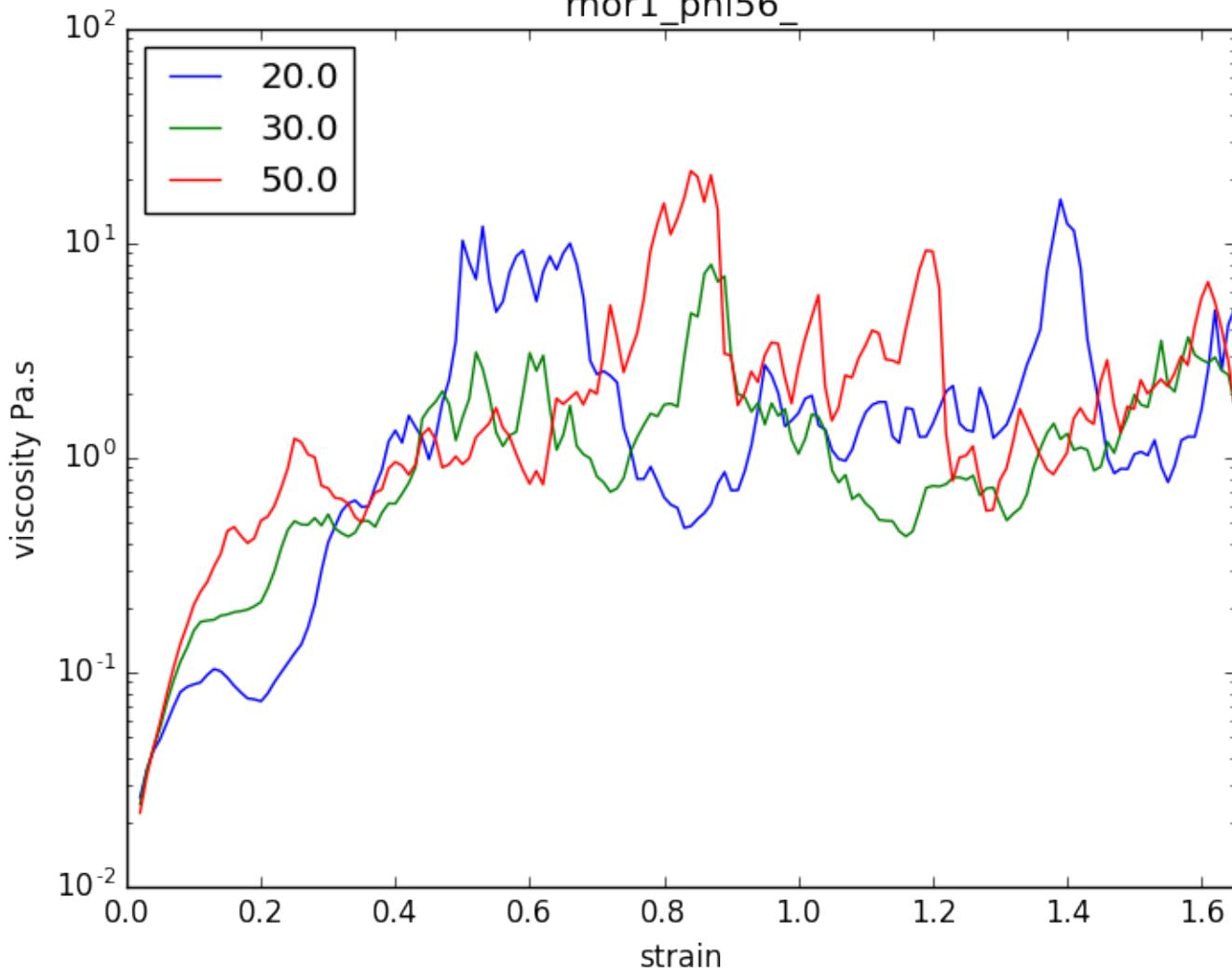
Relative viscosity Pa.s



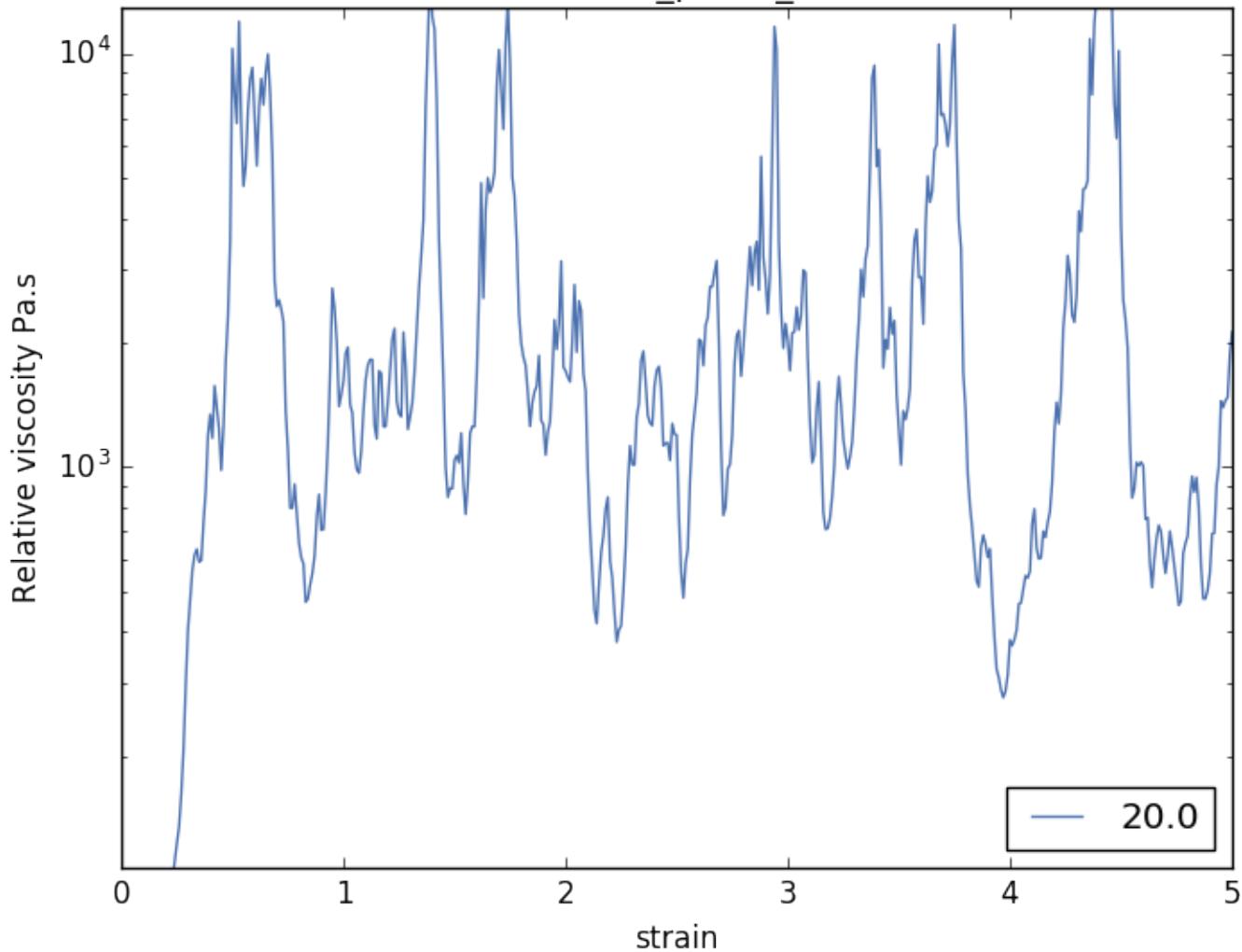
14.0



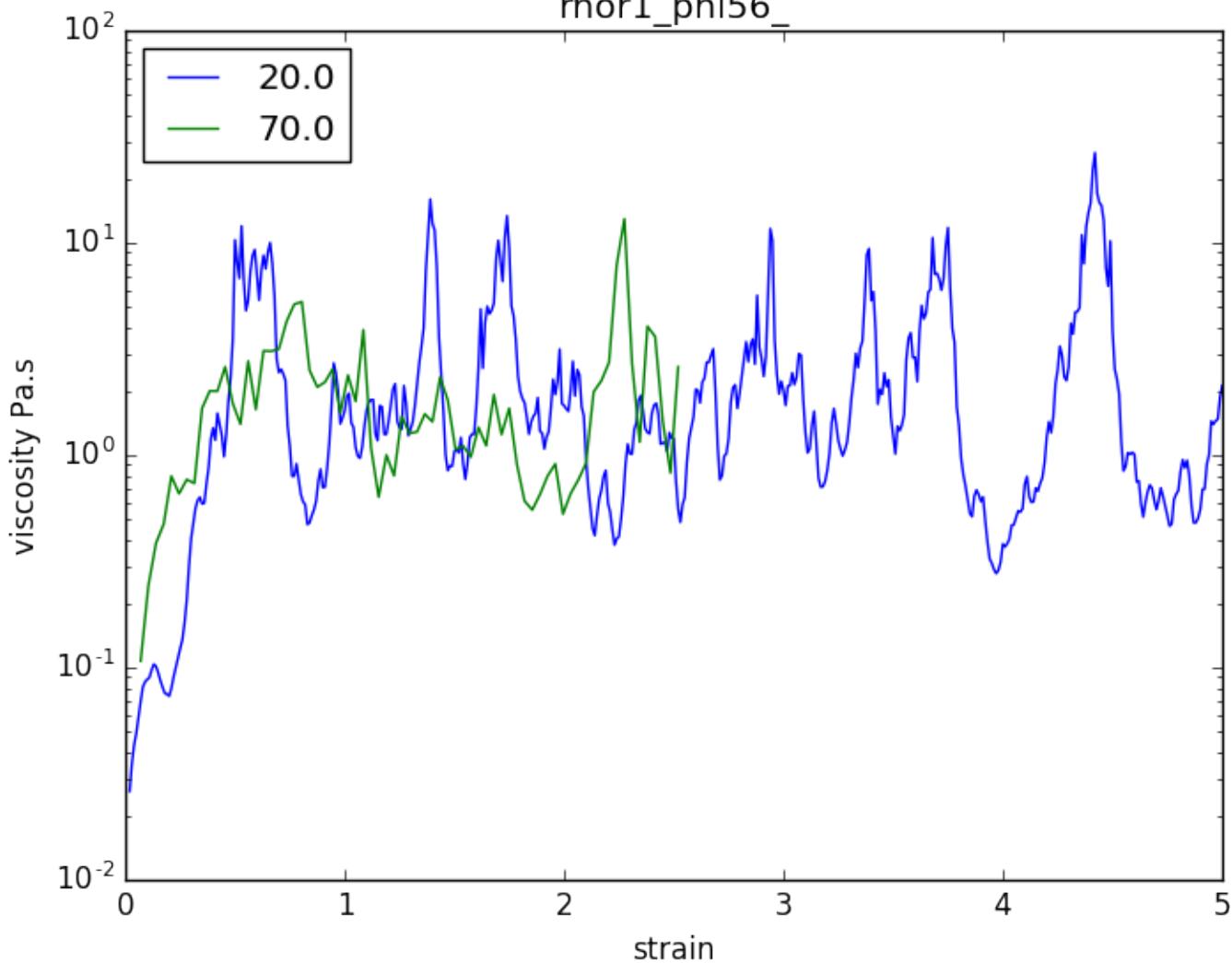
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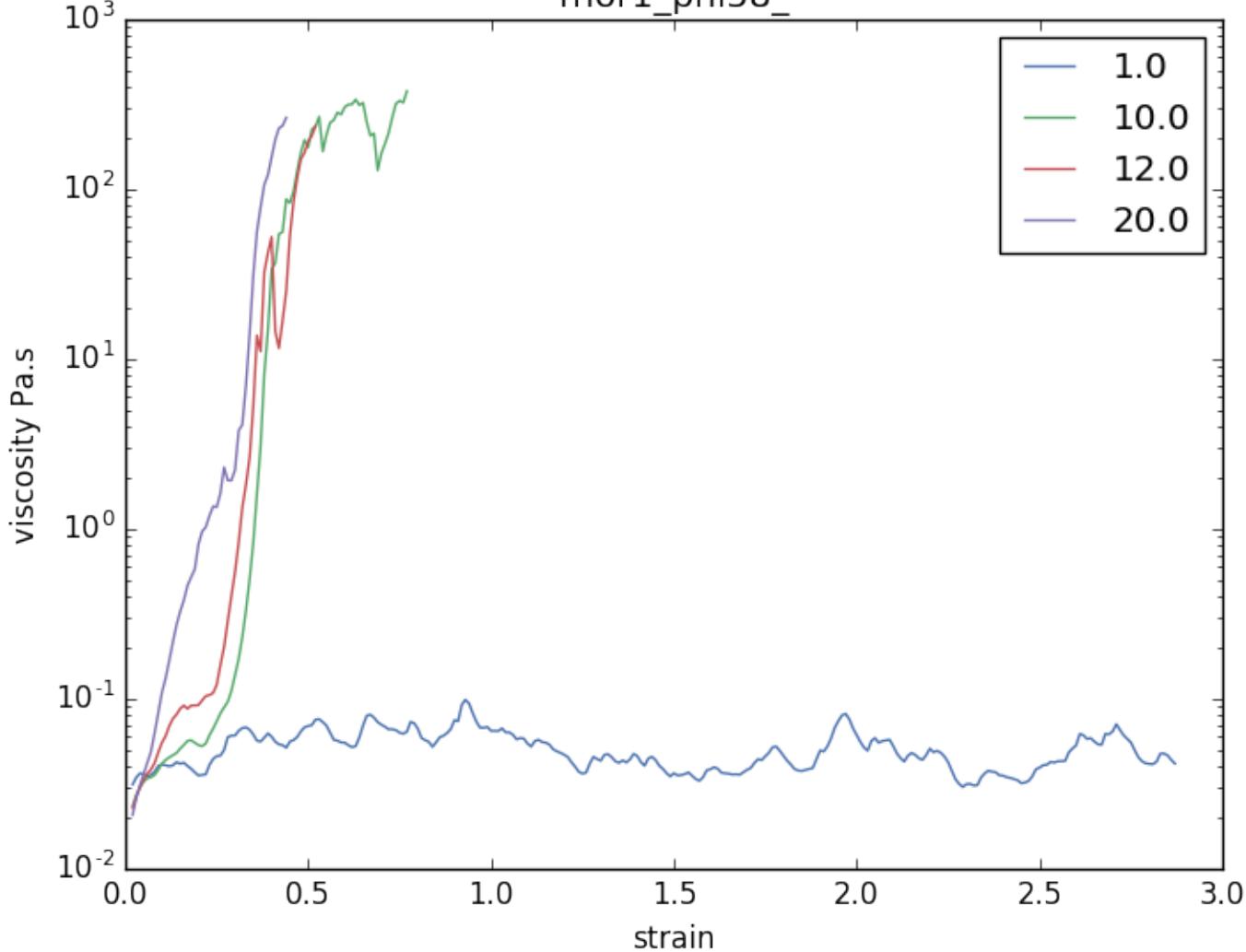
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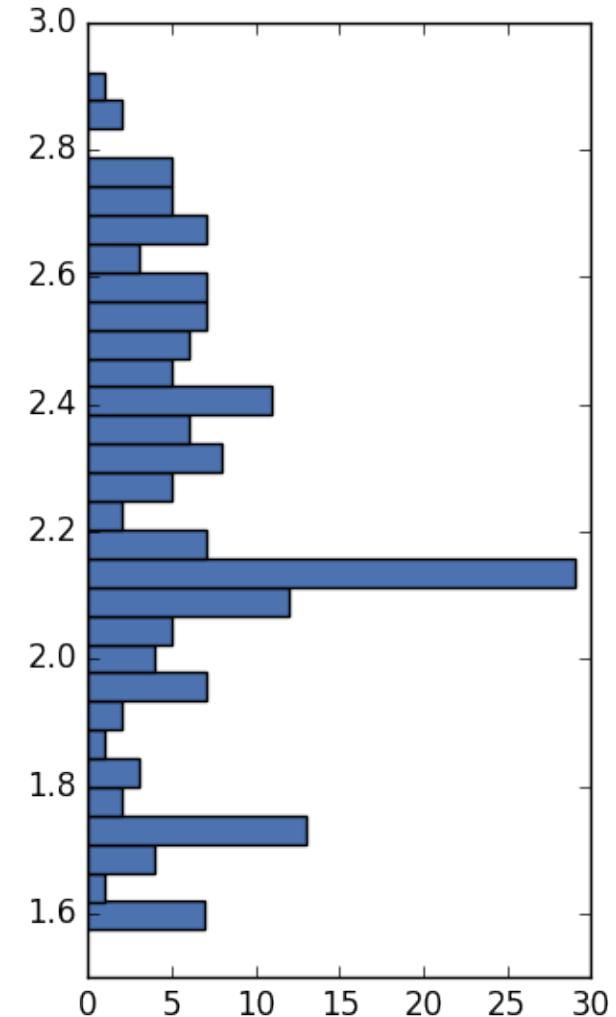
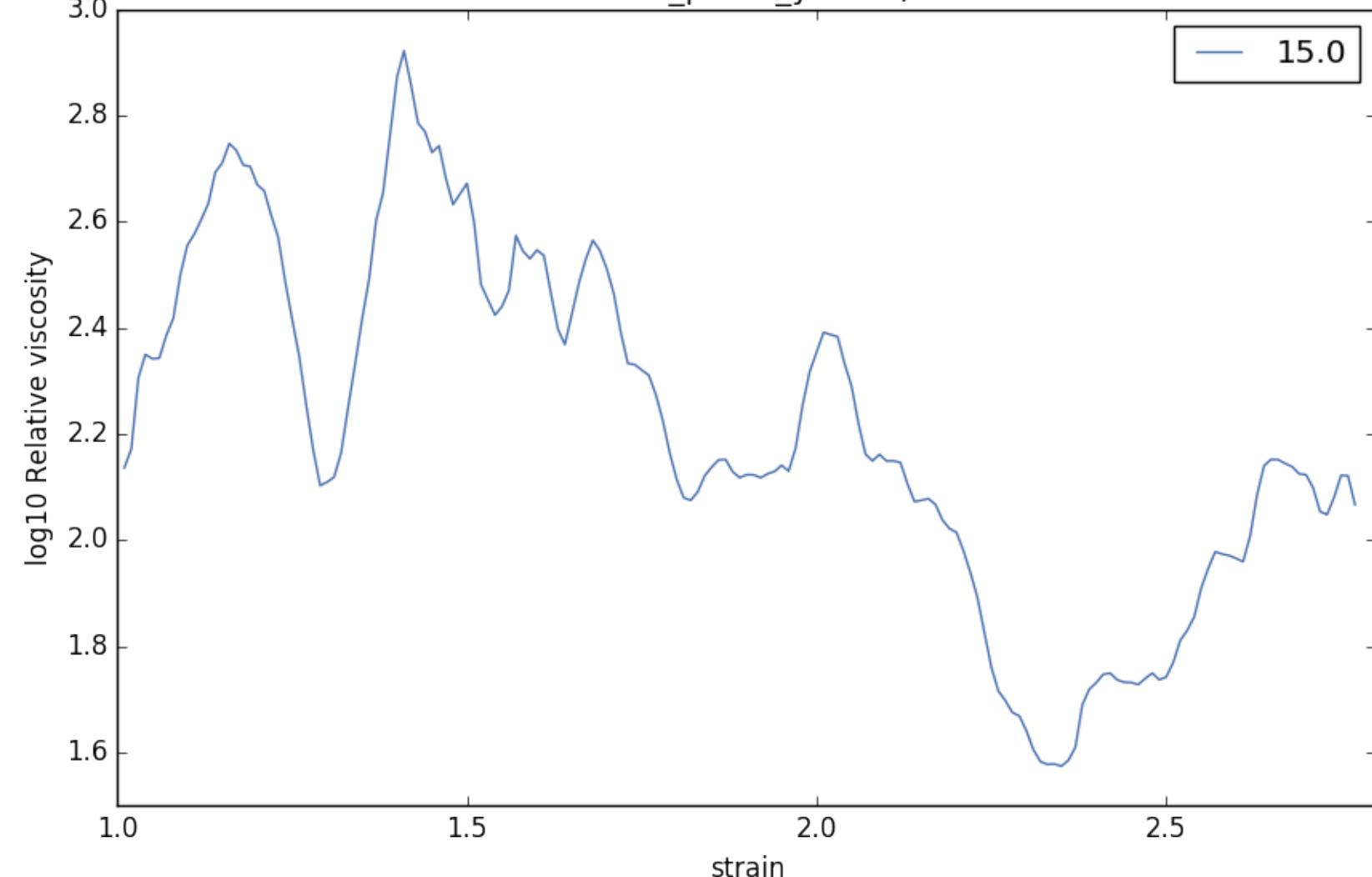
rhor1_phi56



rhor1_phi58_

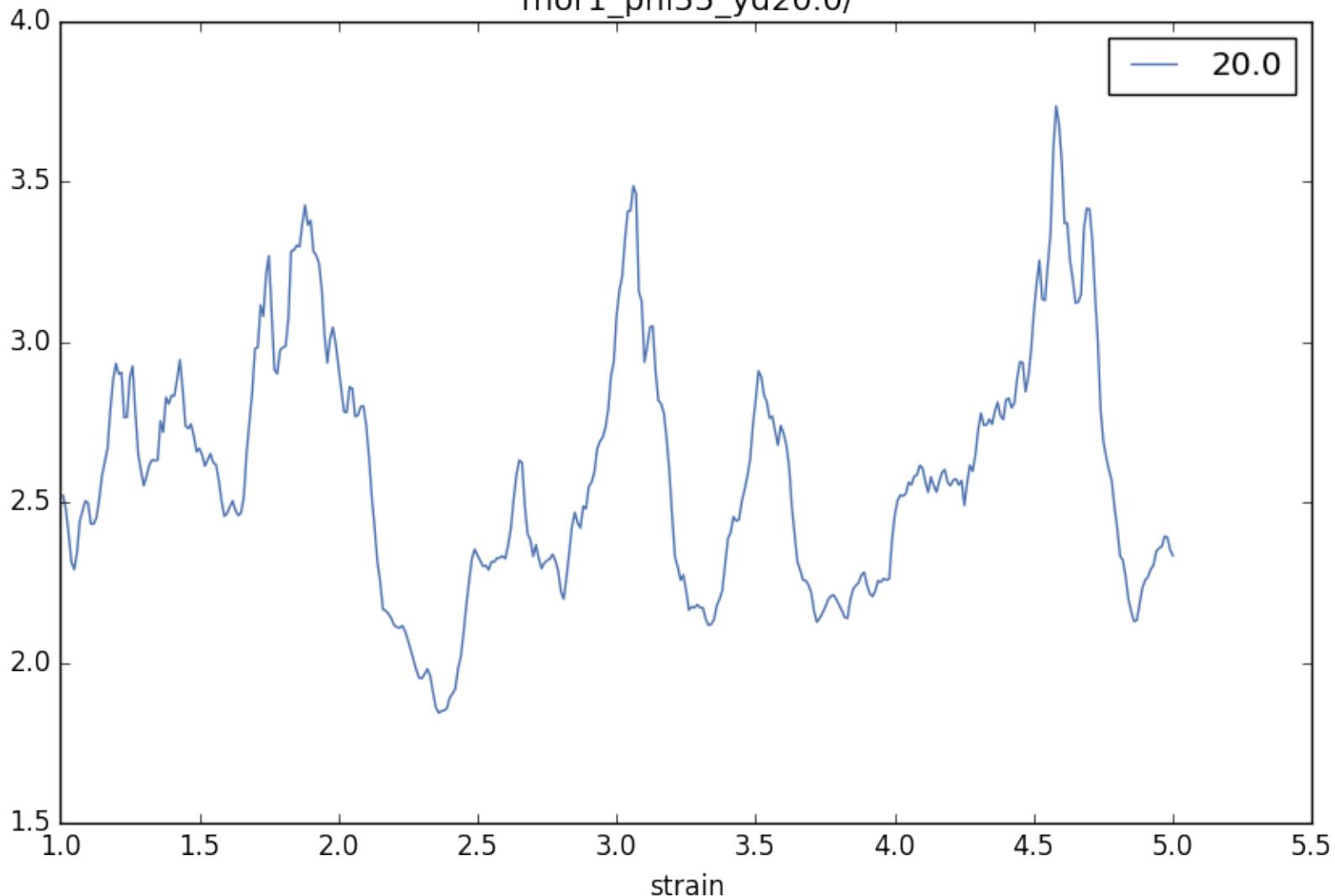


rhor1_phi55_yd15.0/

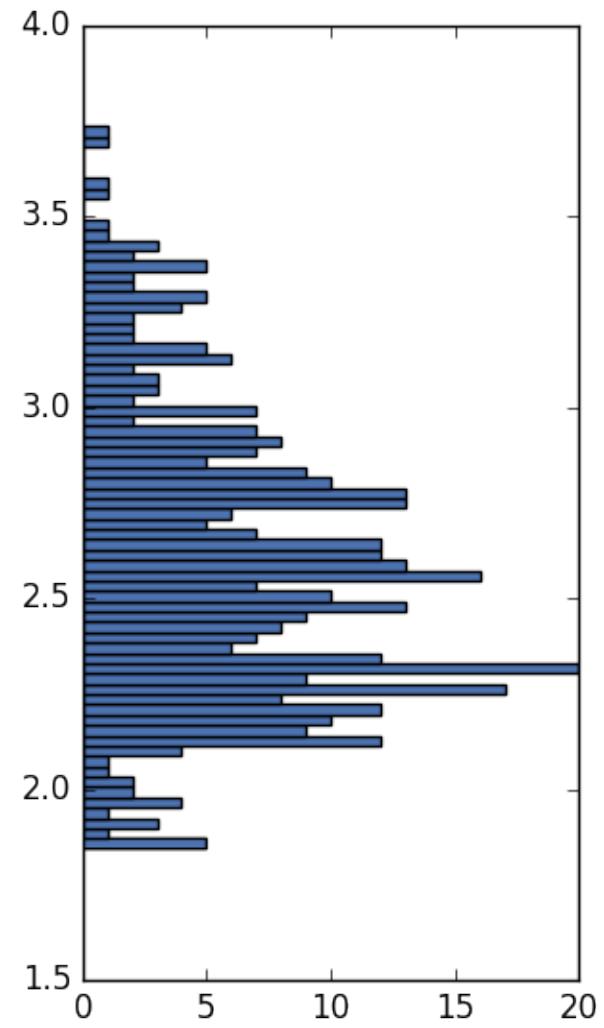


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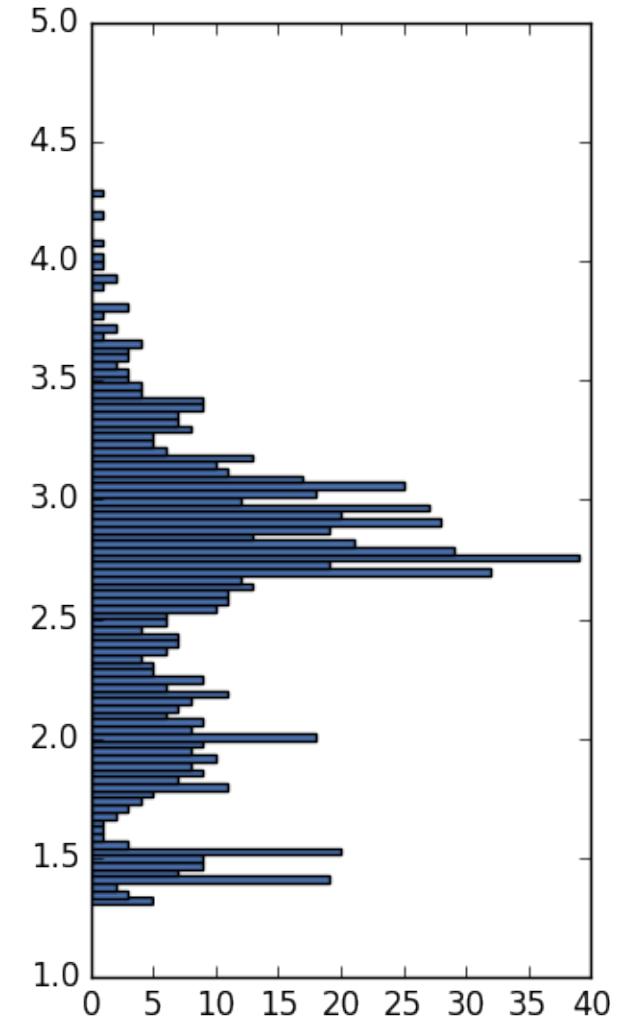
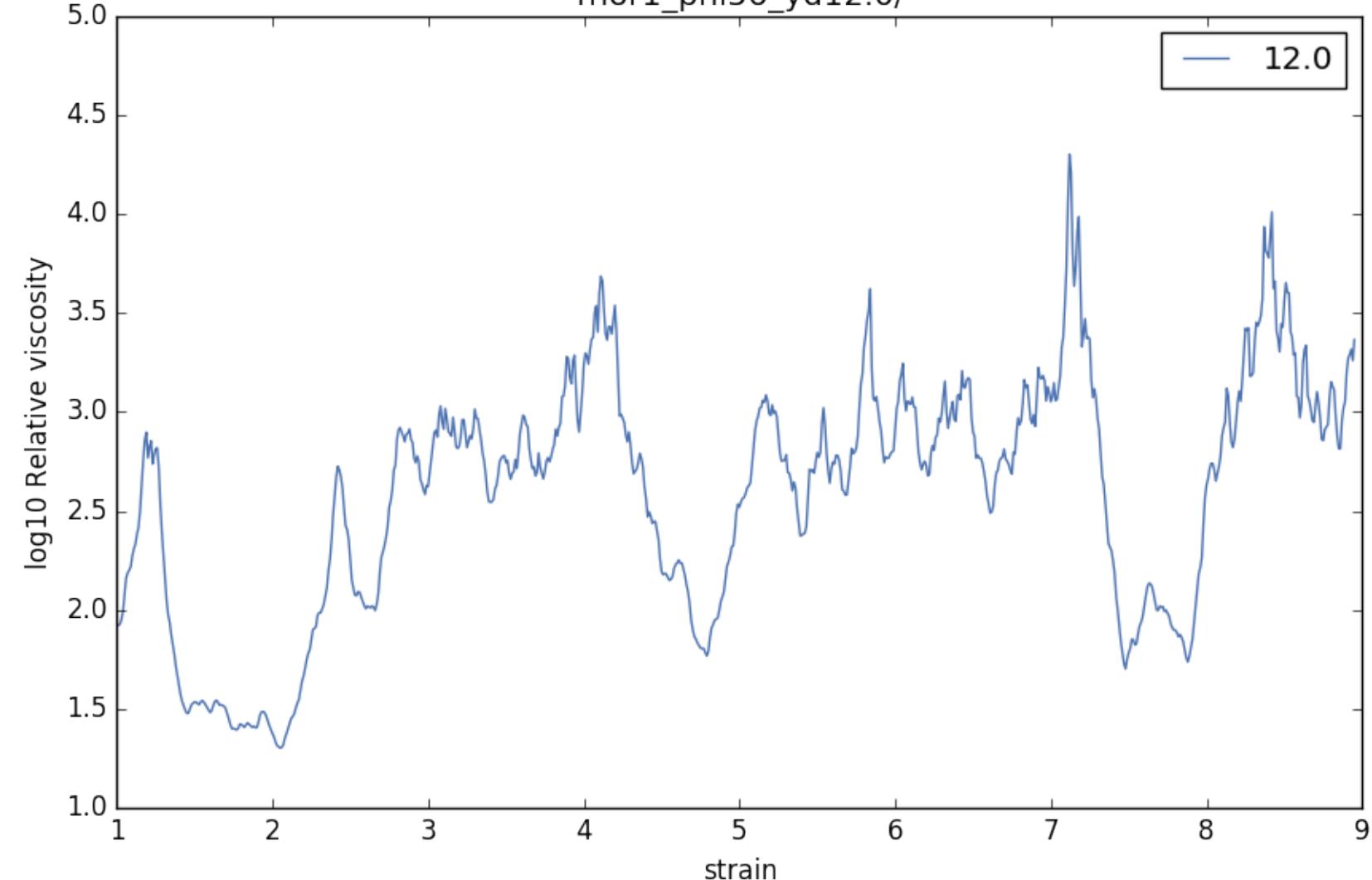
log₁₀ Relative viscosity



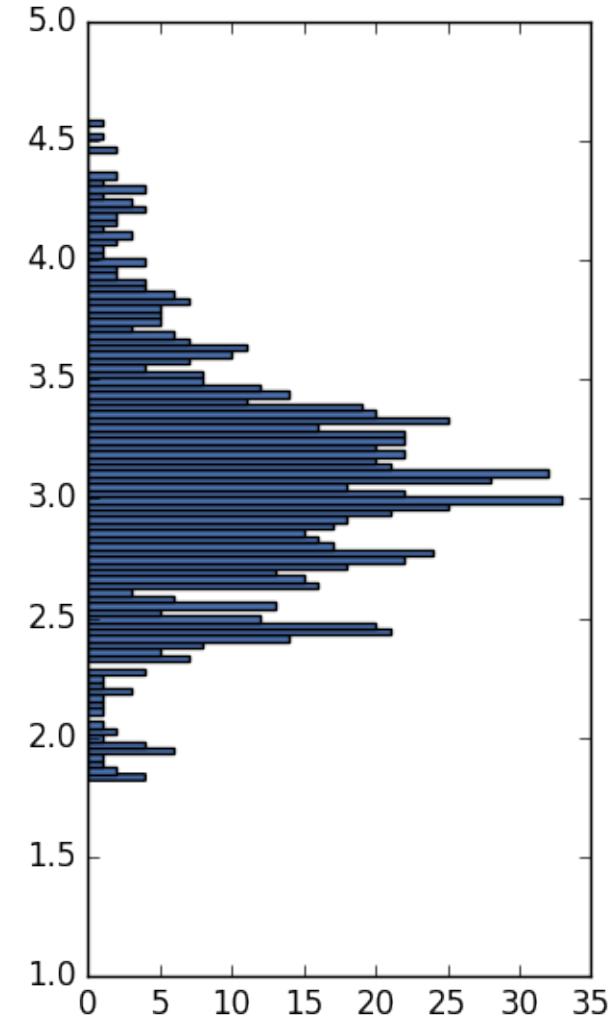
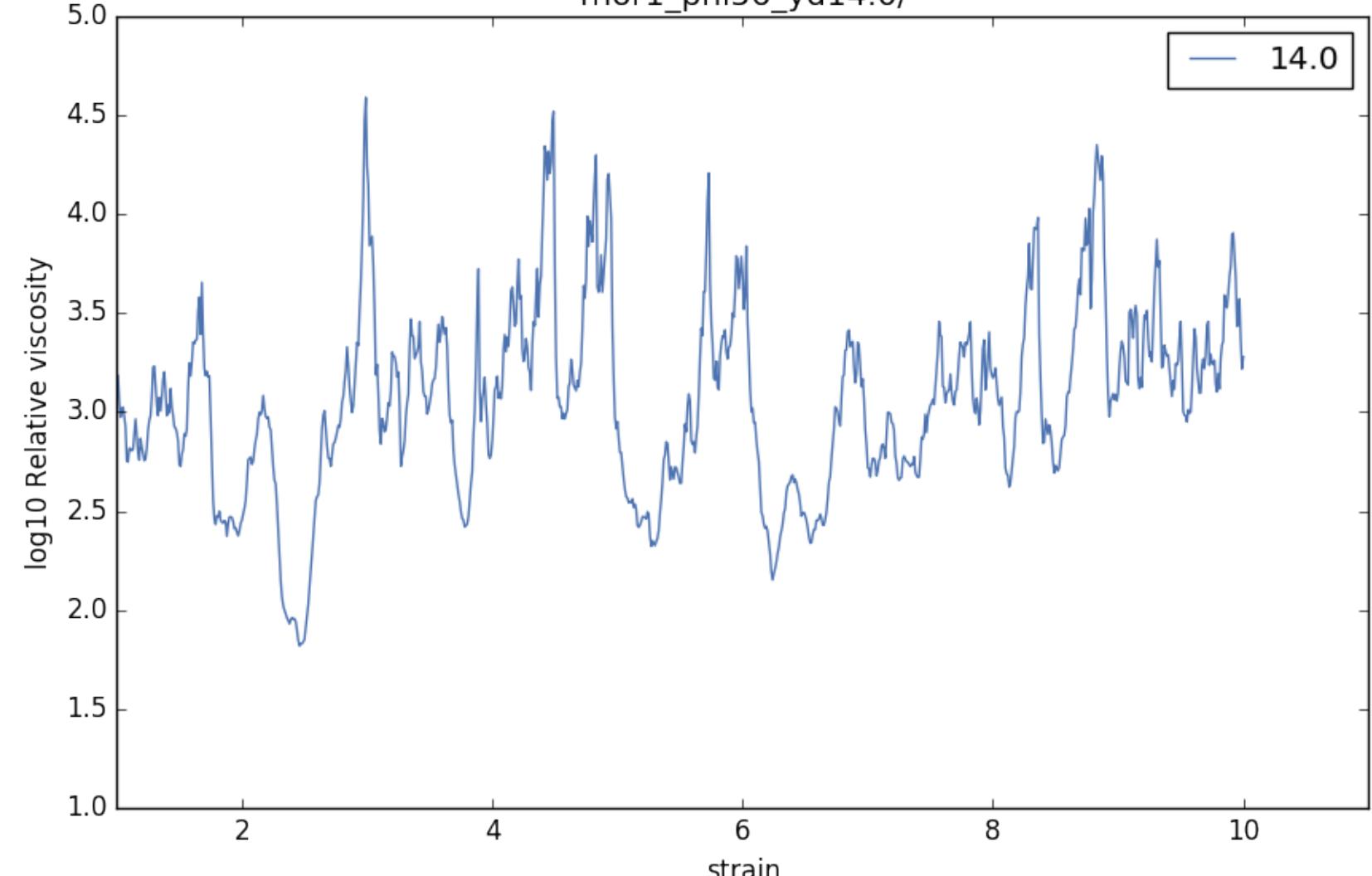
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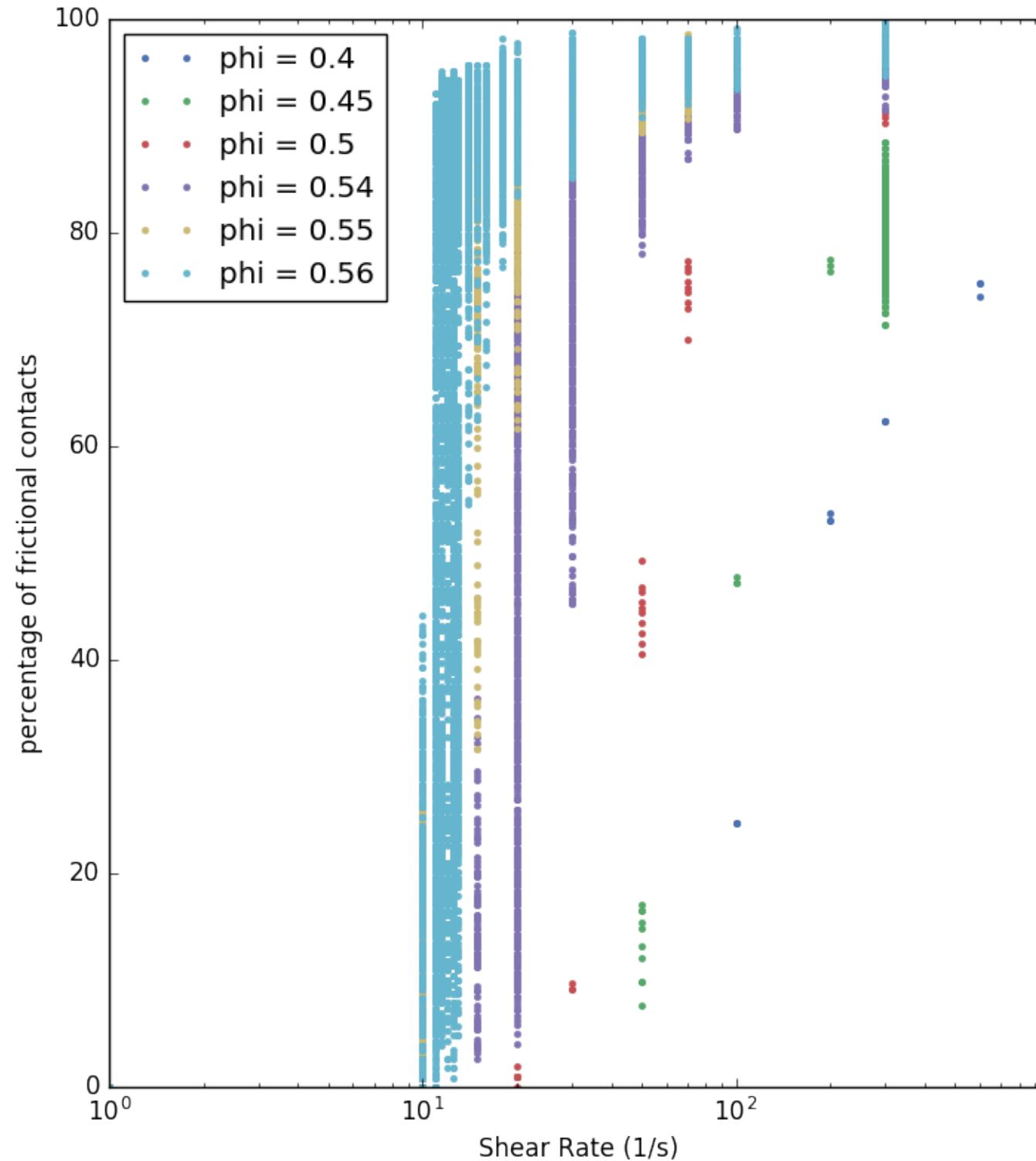
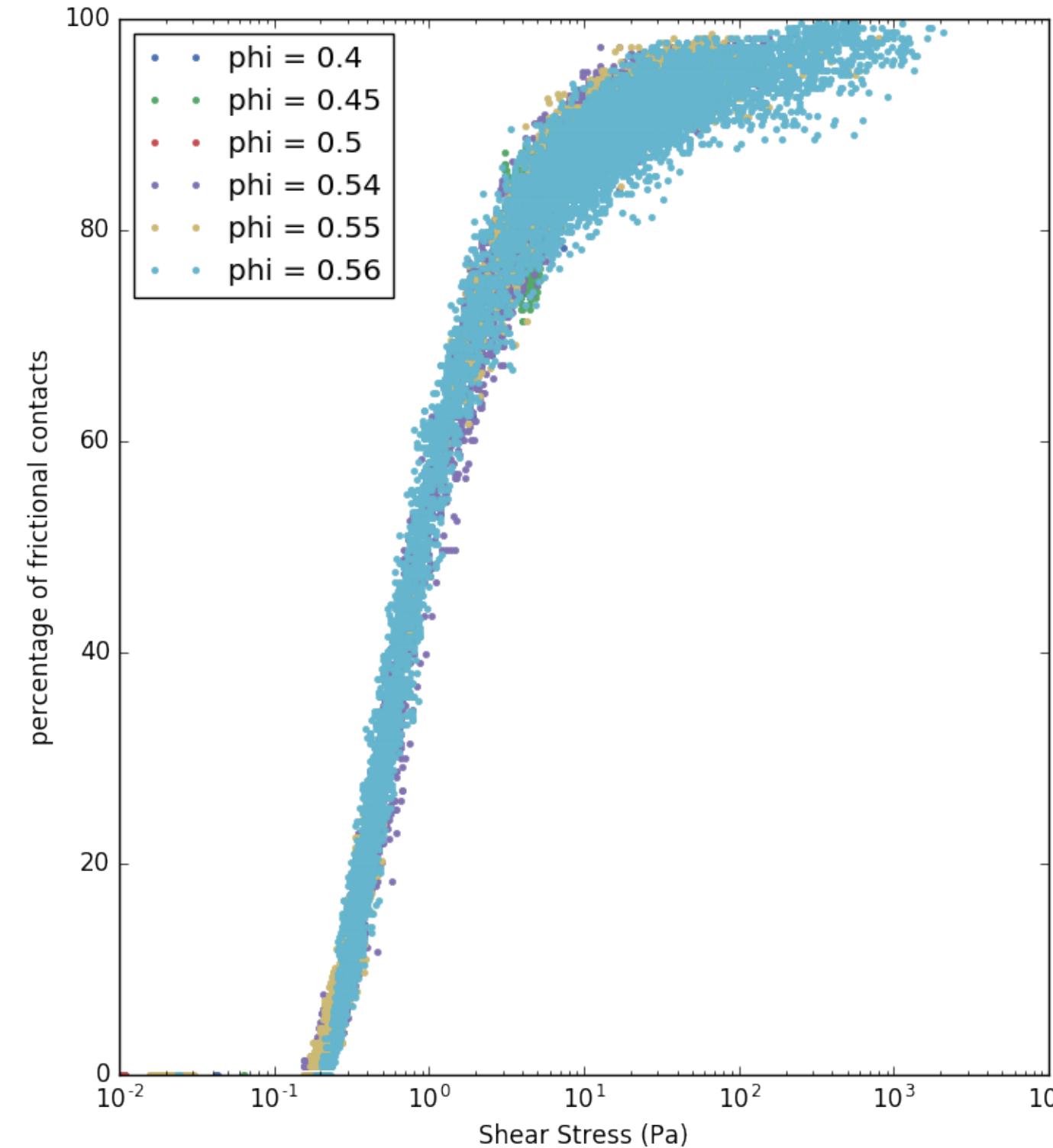


rhor1_phi56_yd12.0/

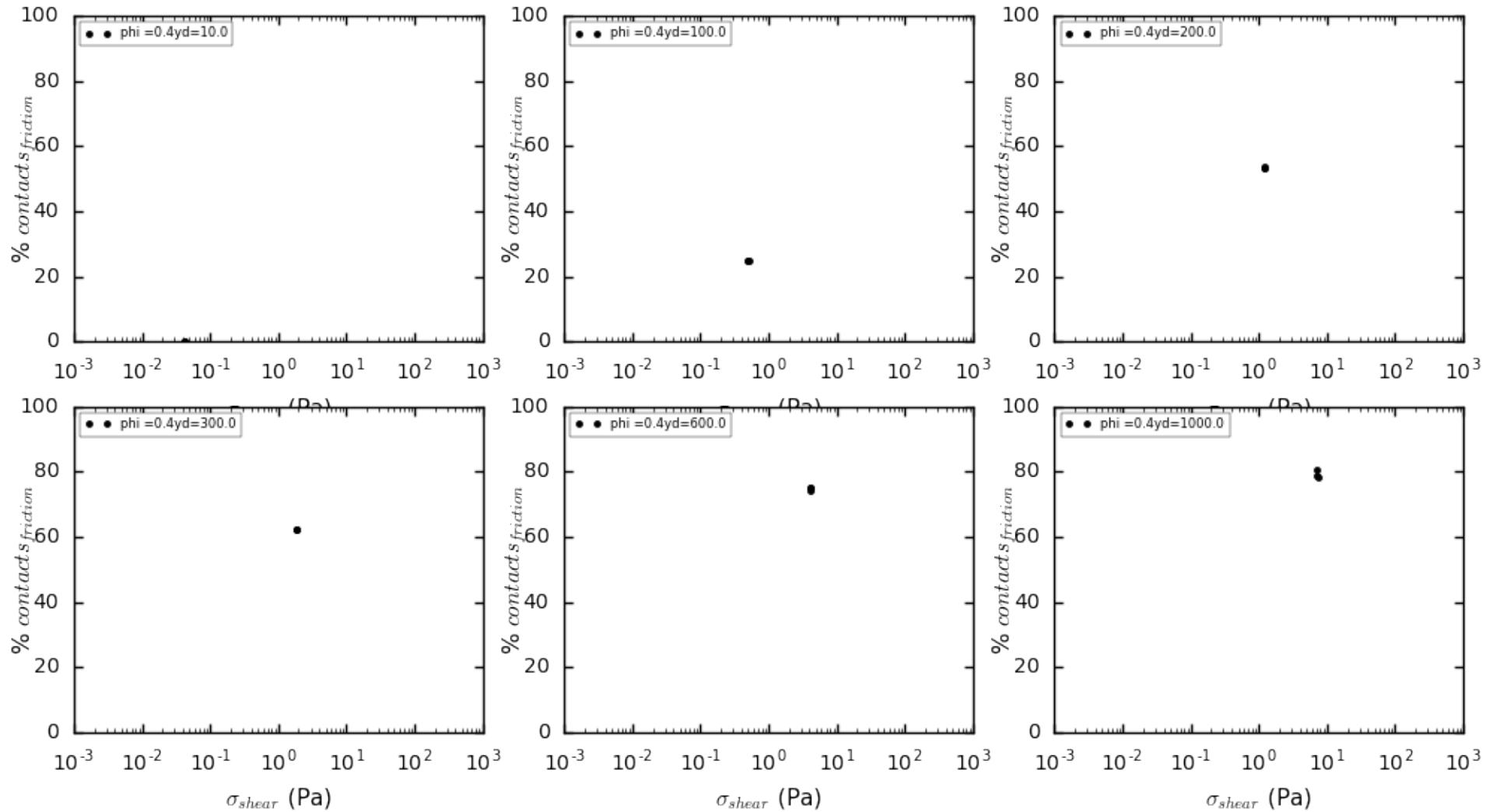


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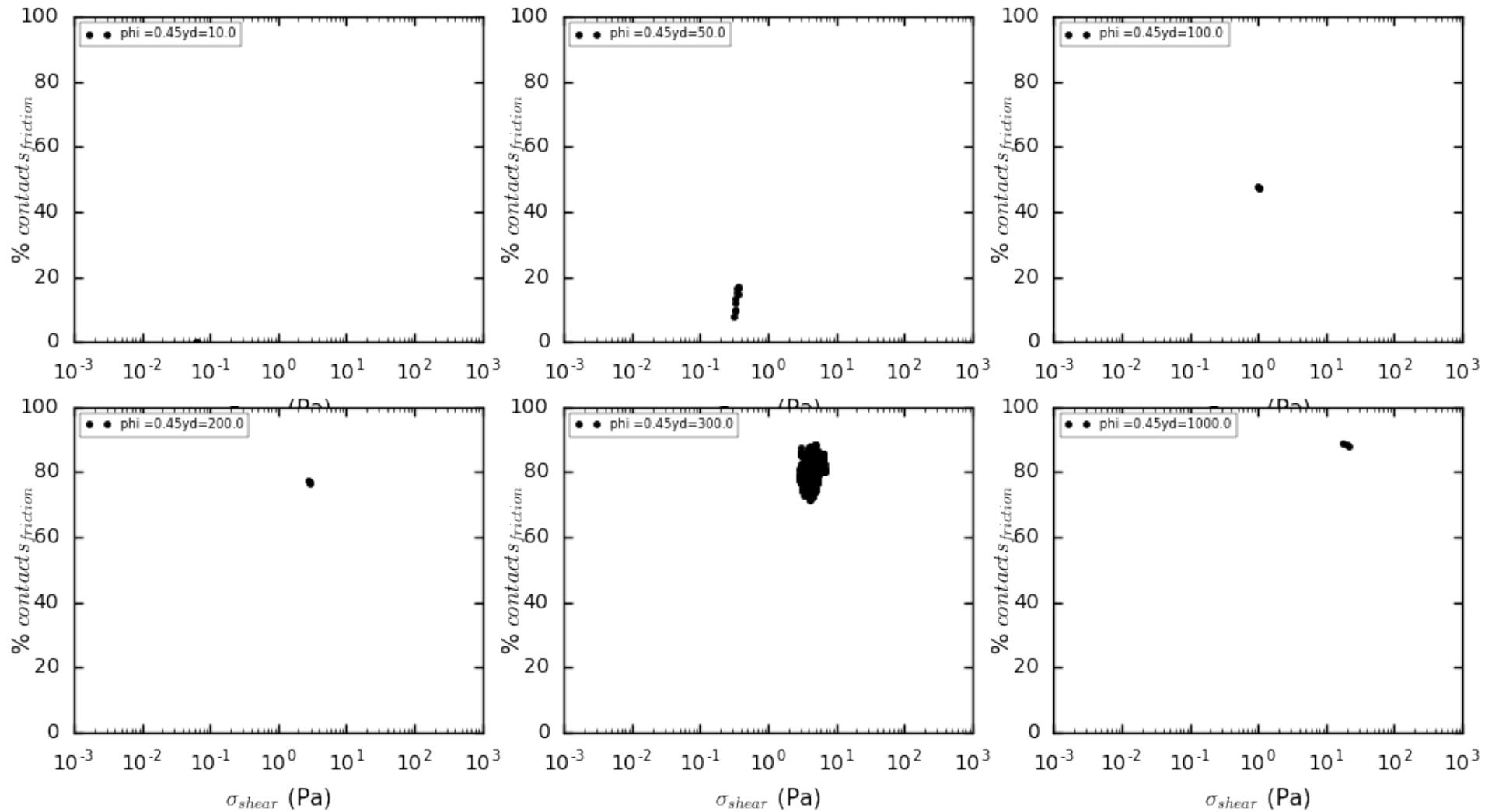




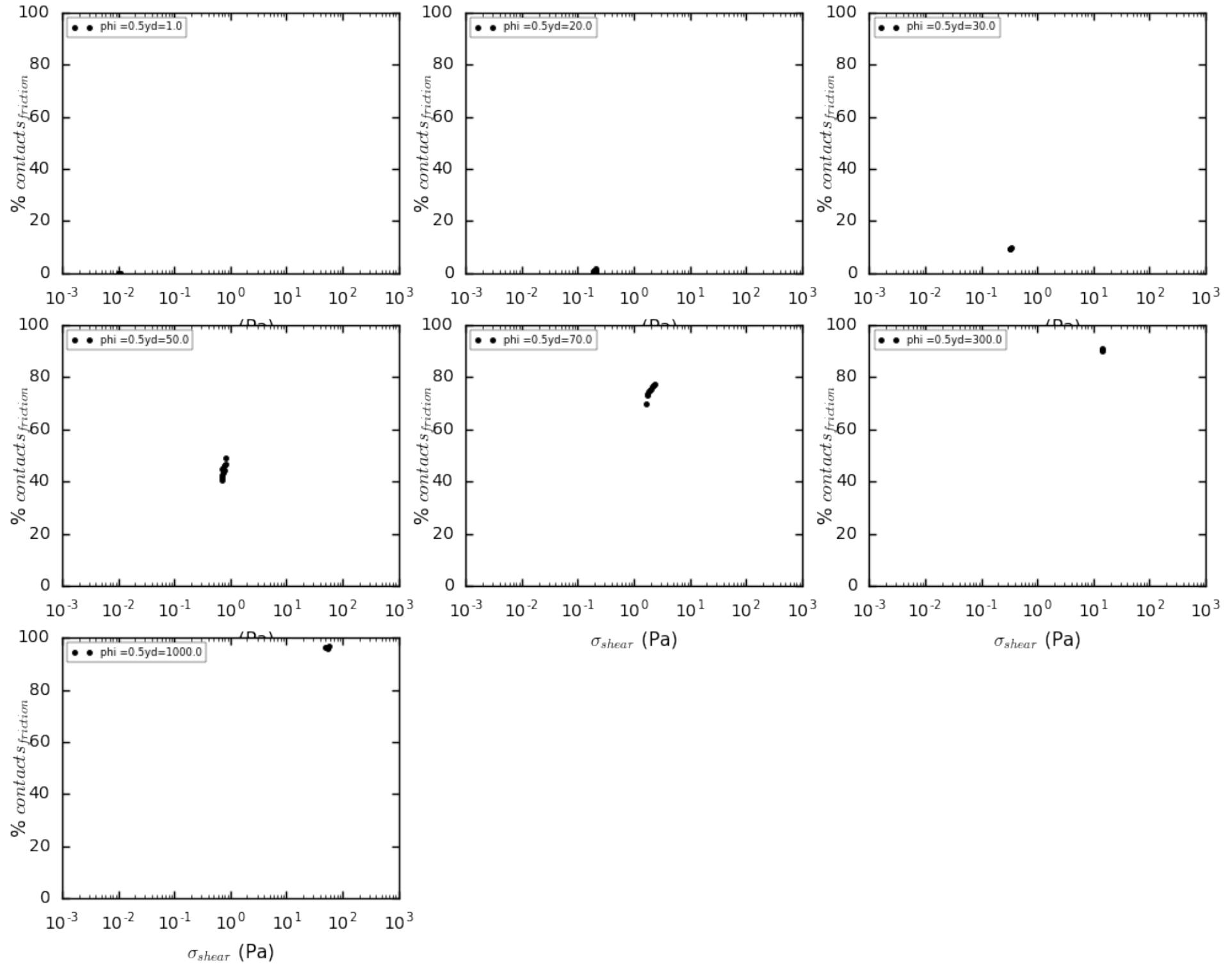
σ_{shear} vs $contact_{friction}$ for $\phi = 0.4$



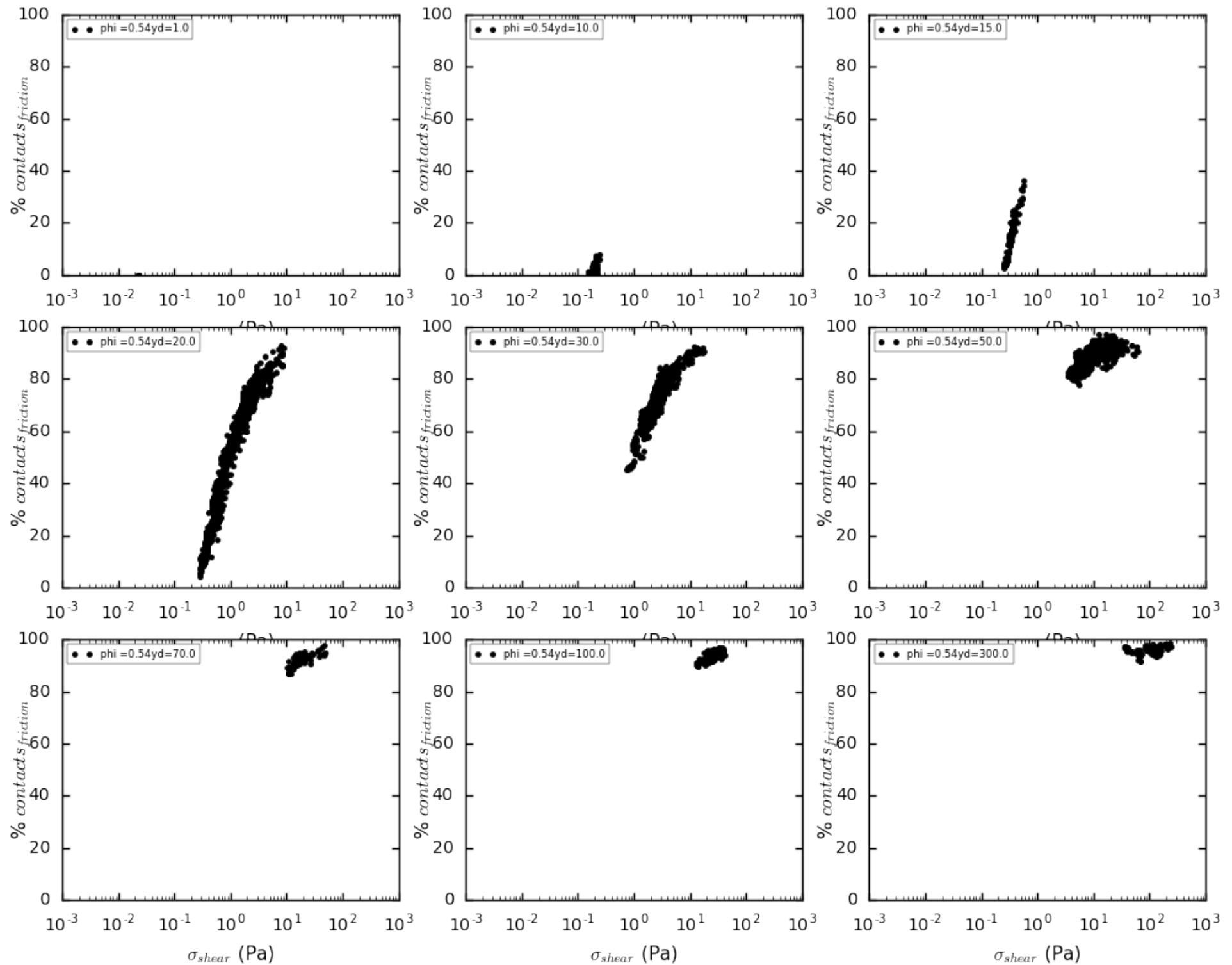
σ_{shear} vs $contact_{friction}$ for $\phi = 0.45$



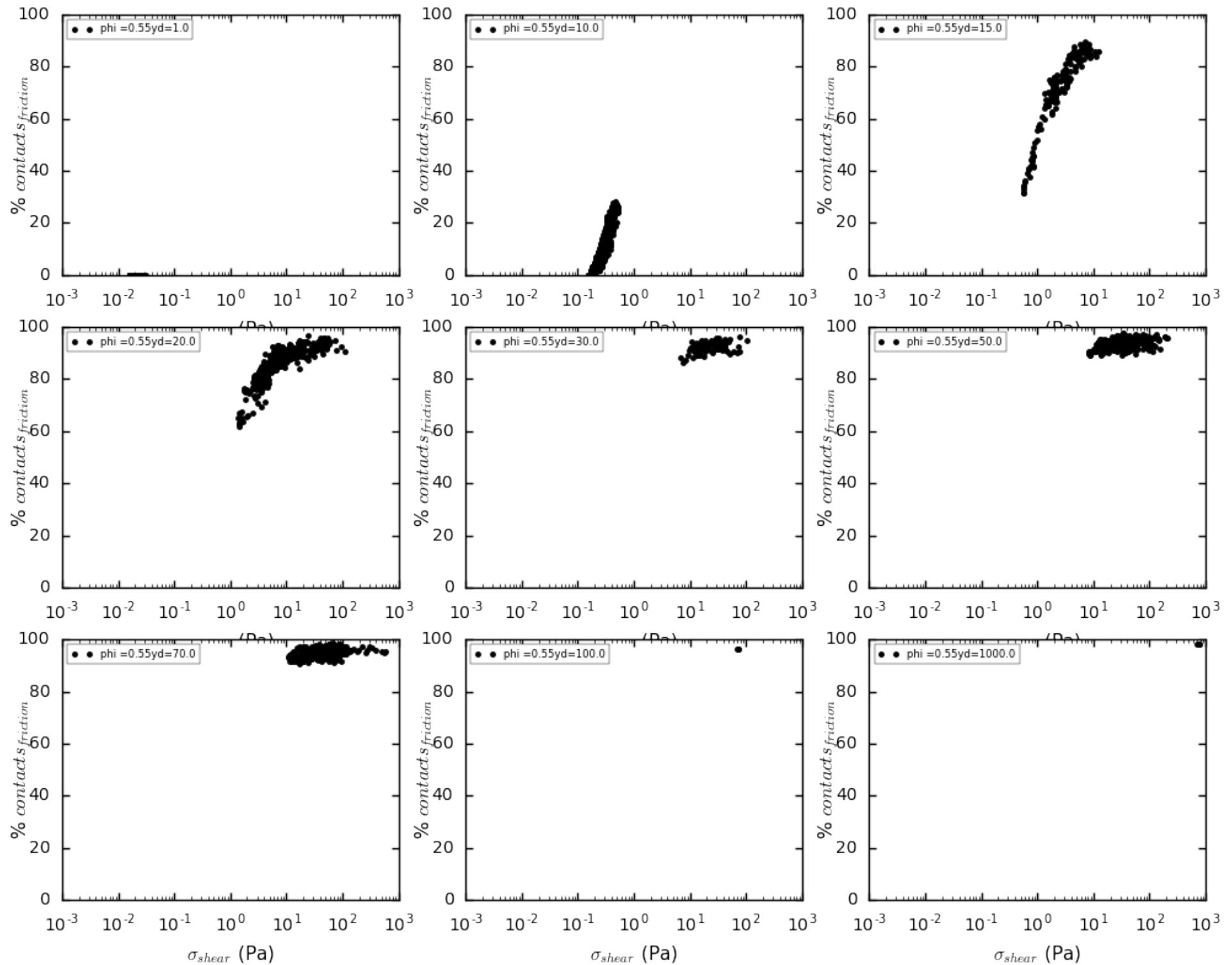
σ_{shear} vs $contact_{friction}$ for $\phi = 0.5$



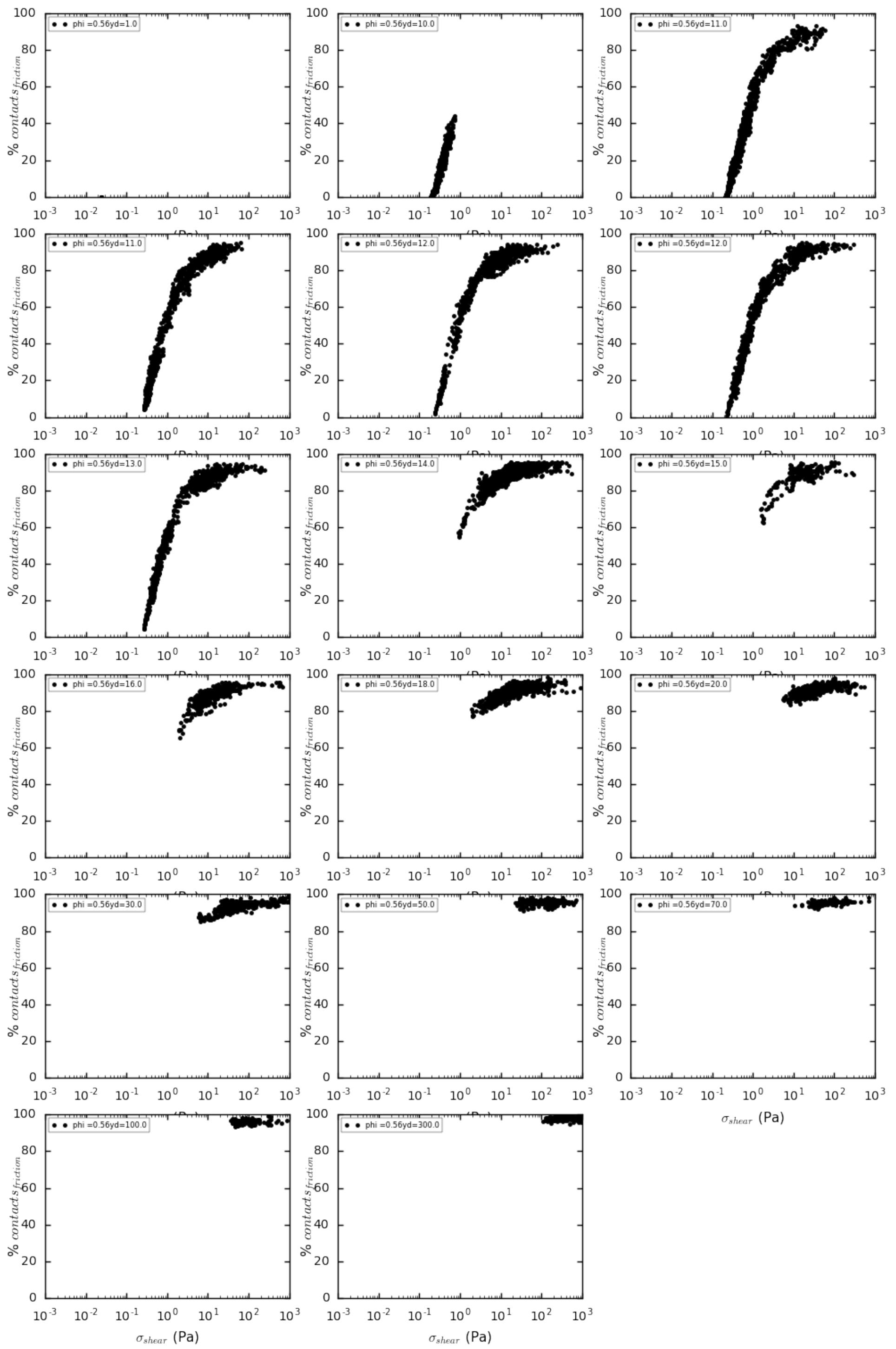
σ_{shear} vs $contact_{friction}$ for $\phi = 0.54$

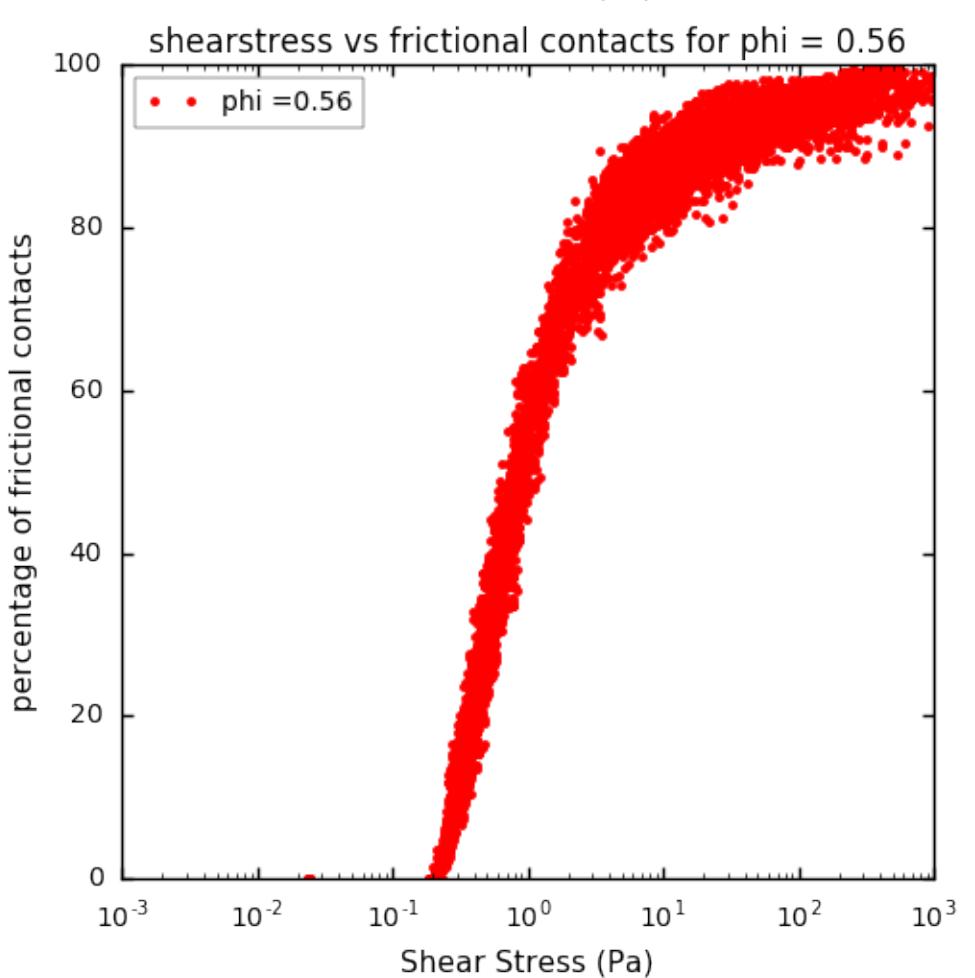
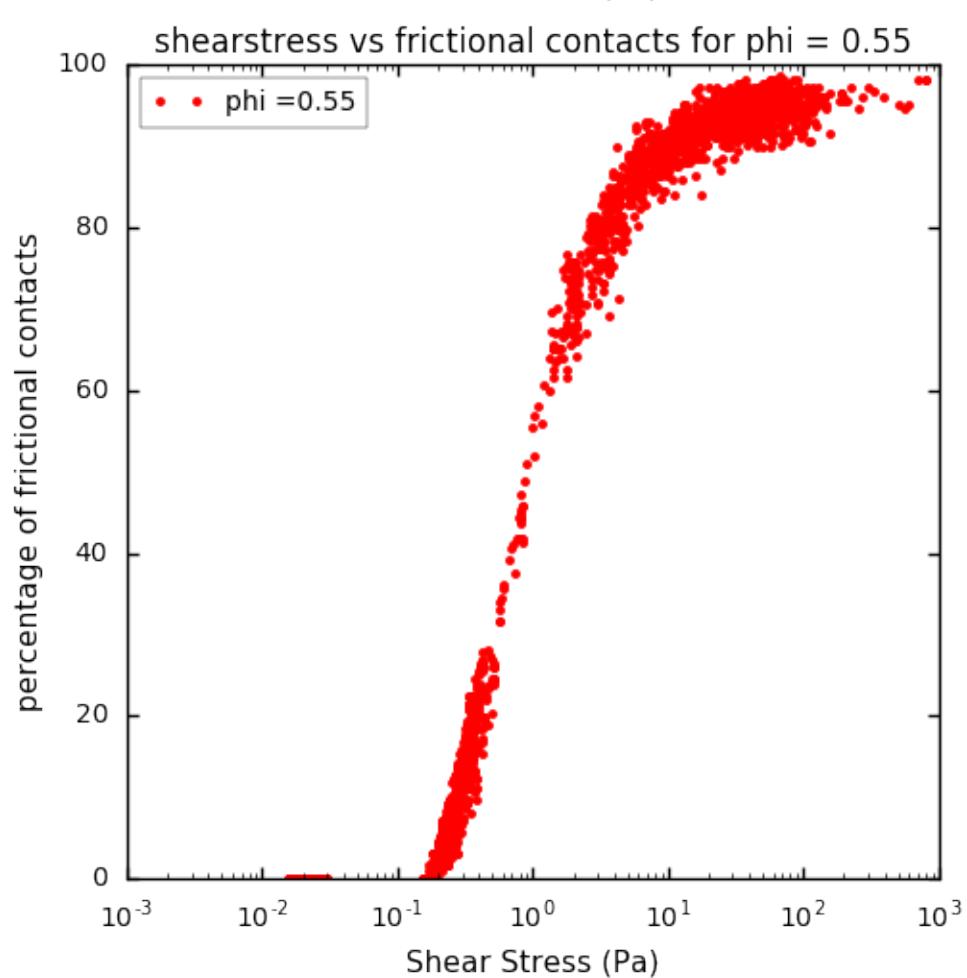
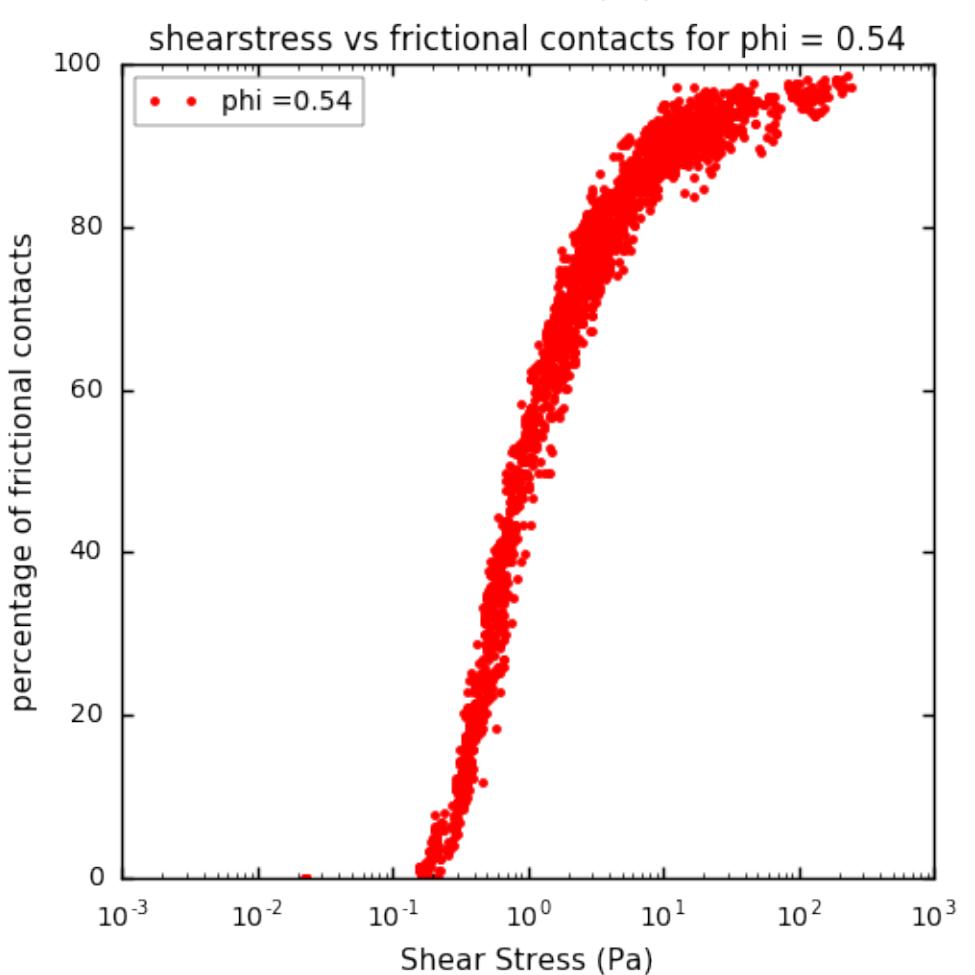
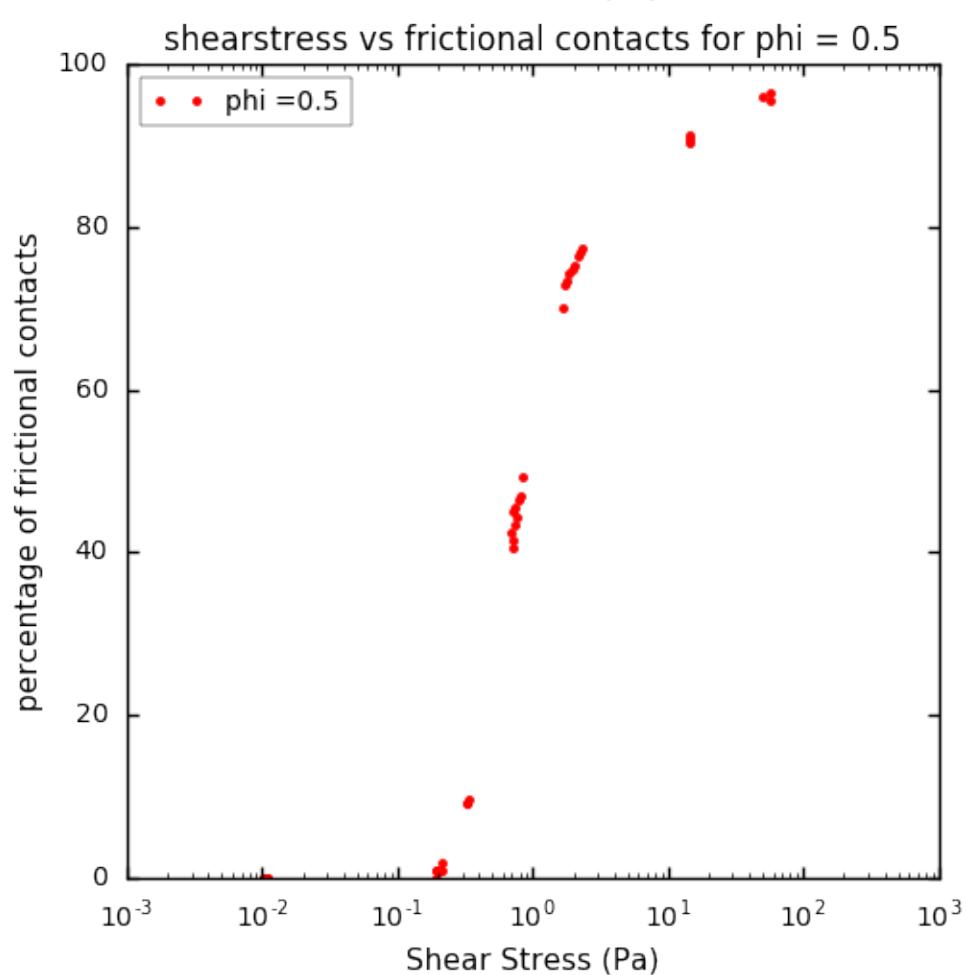
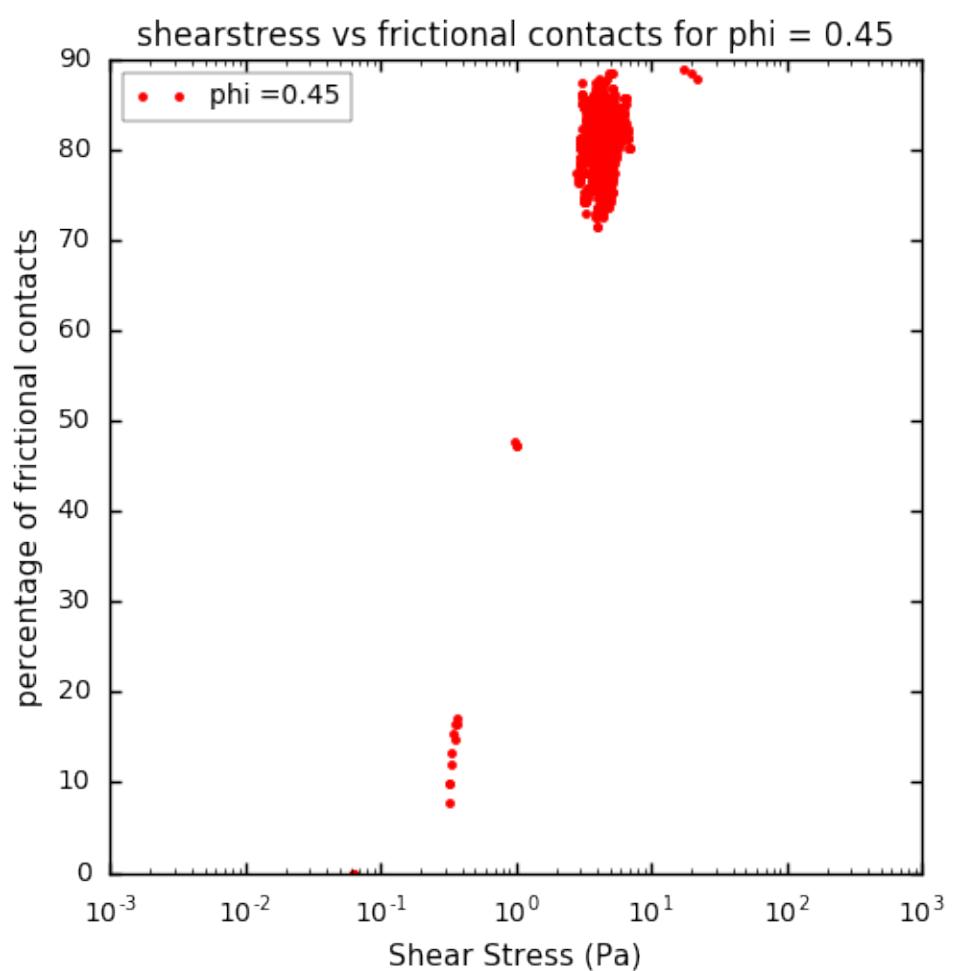
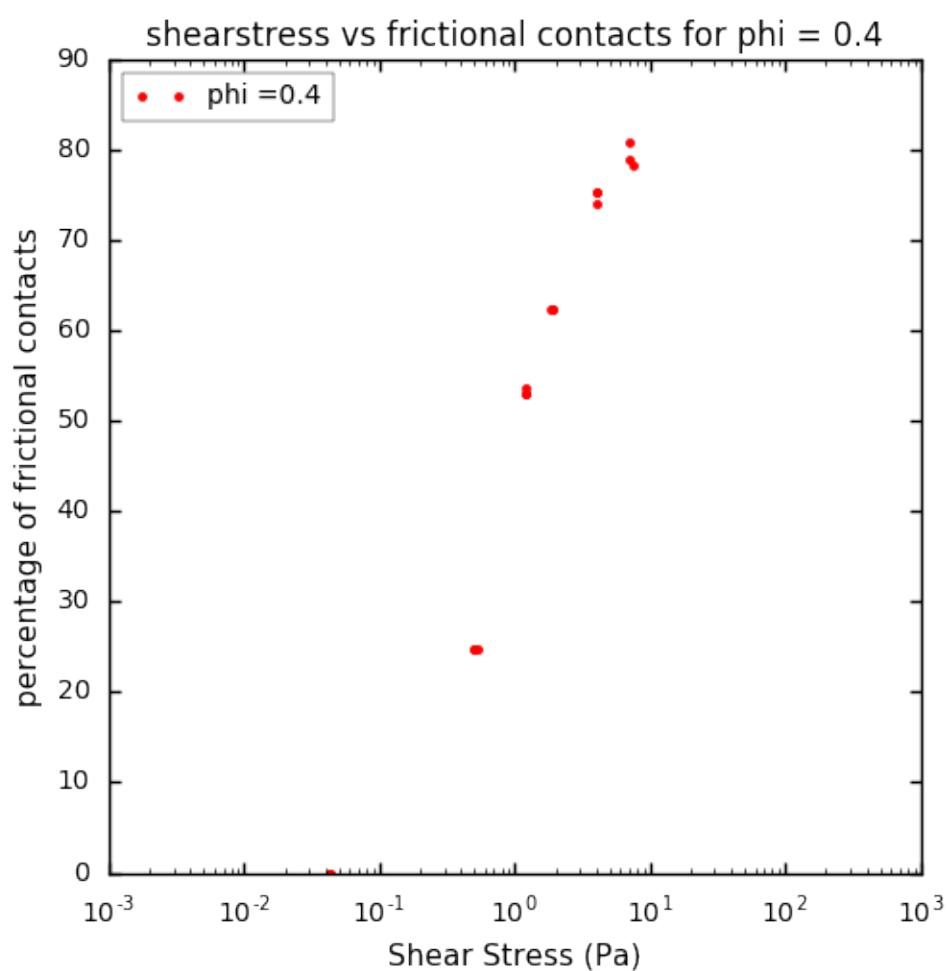


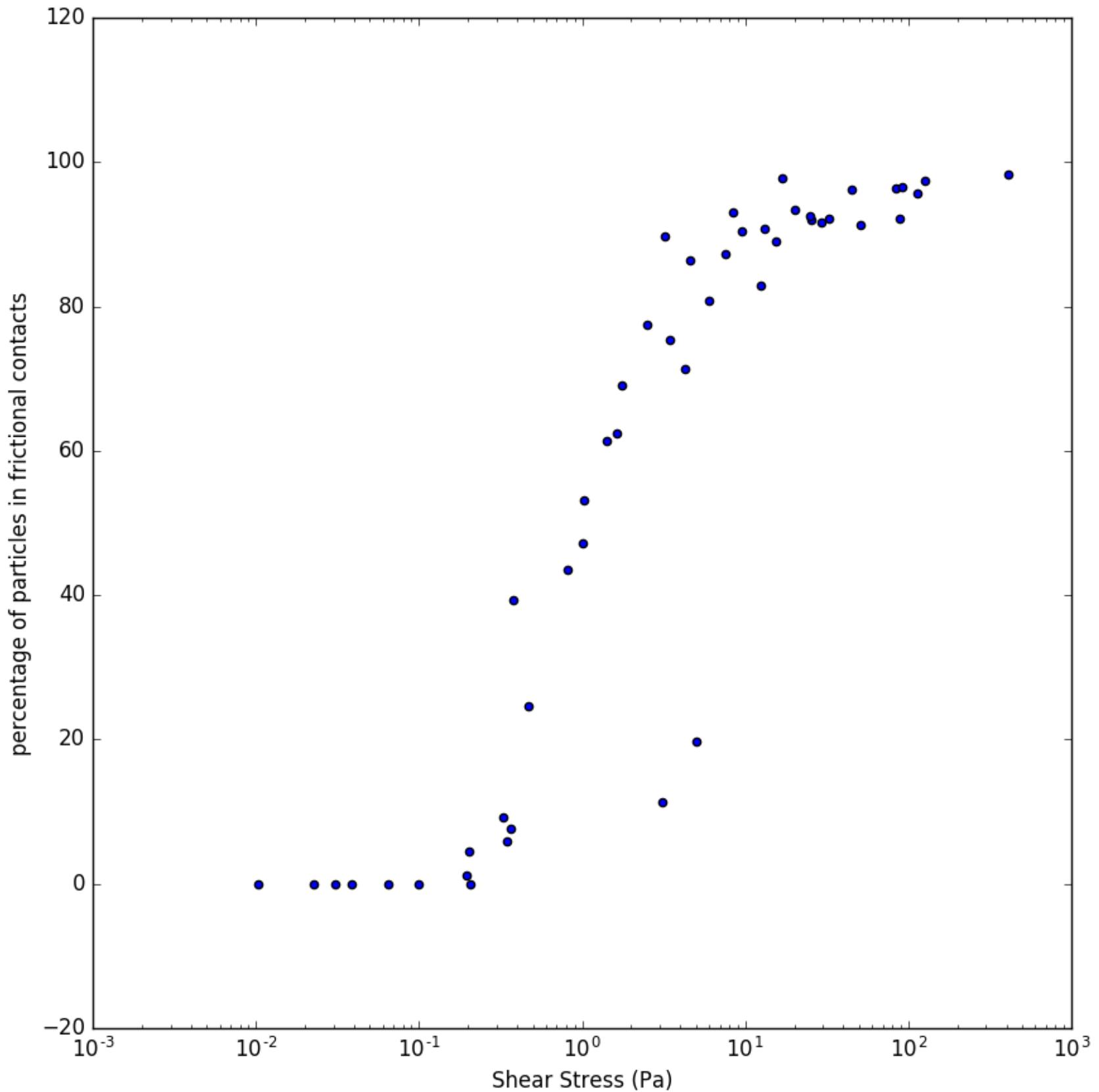
σ_{shear} vs $contact_{friction}$ for $\phi = 0.55$

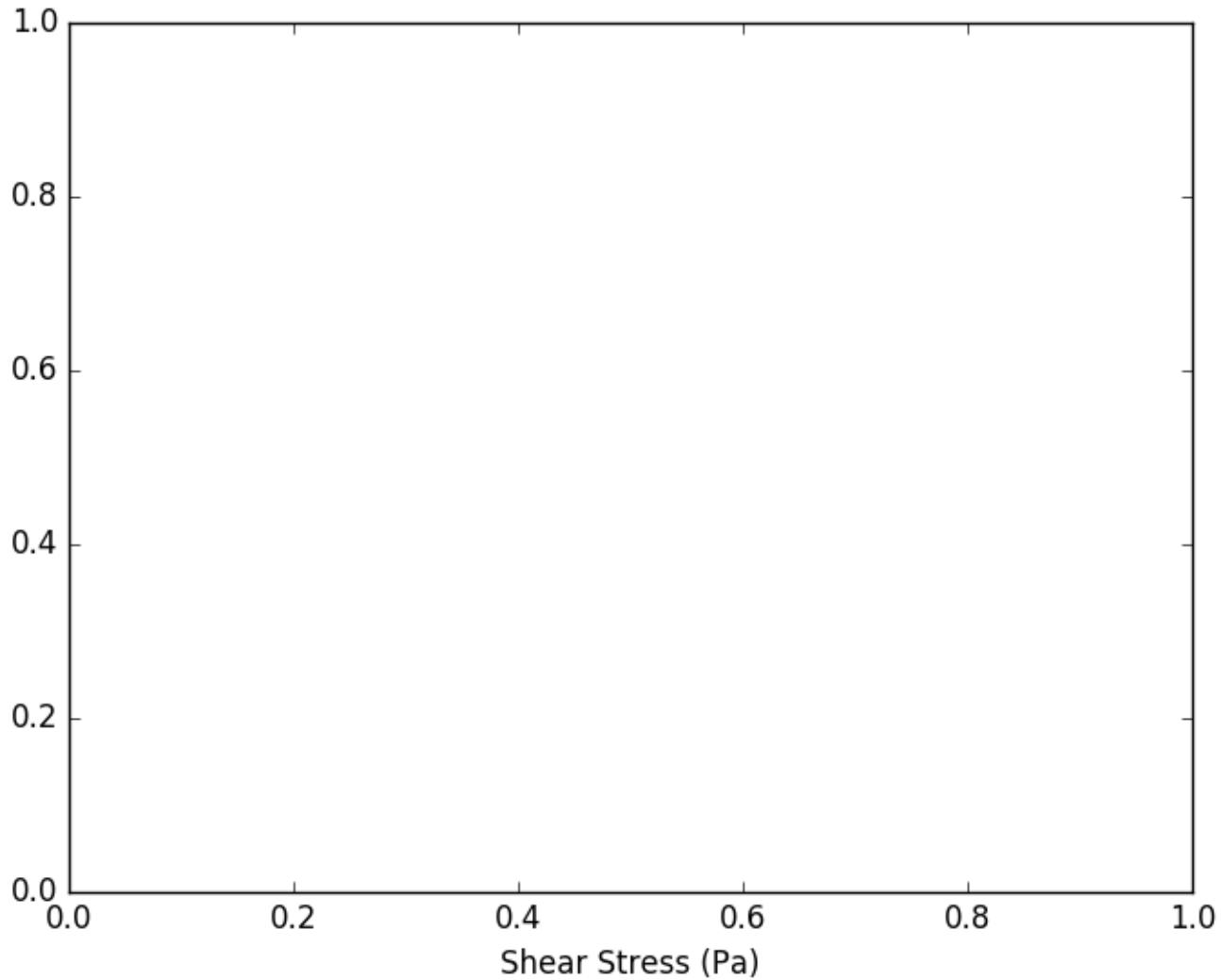


σ_{shear} vs $contact_{friction}$ for $\phi = 0.56$

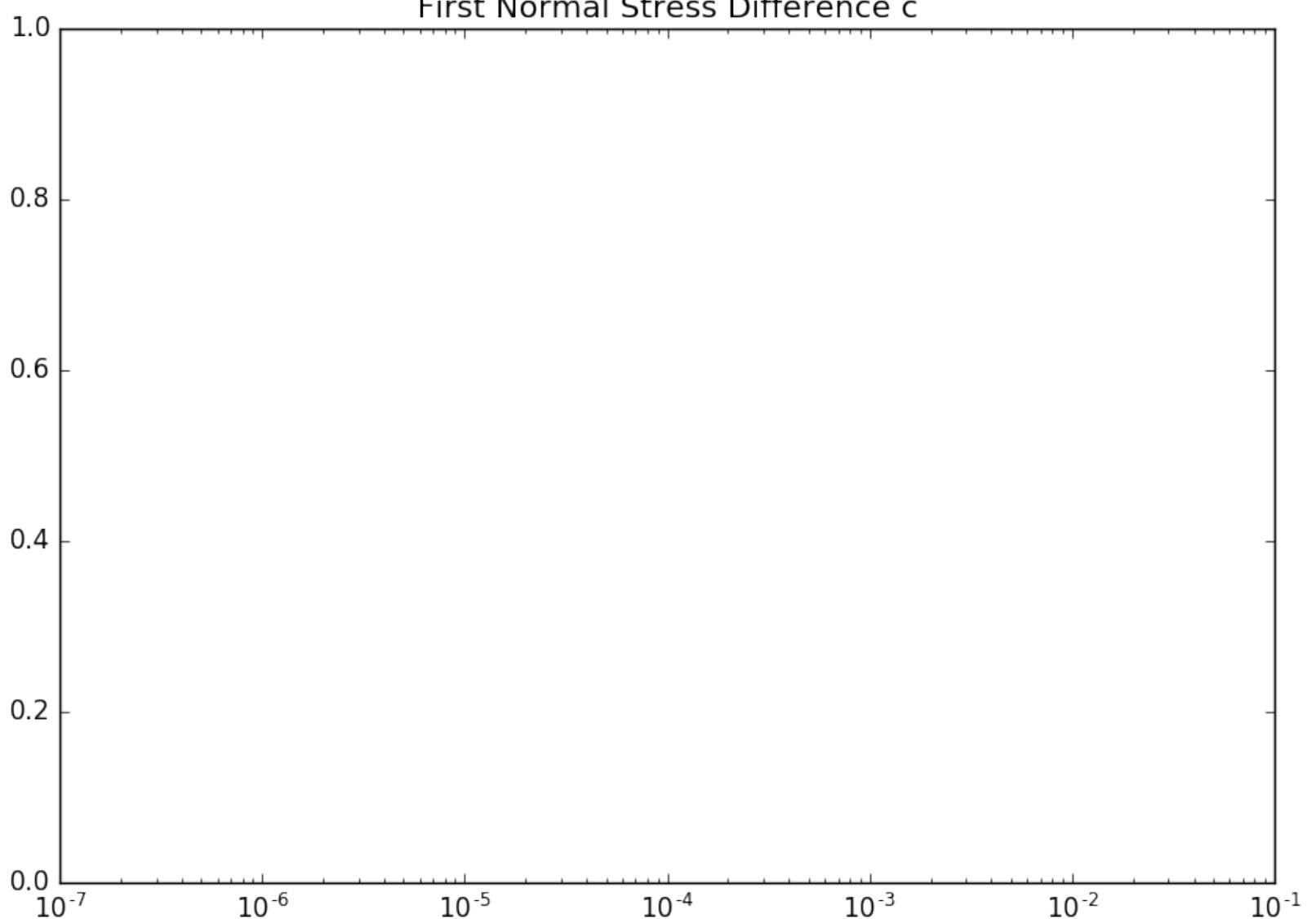




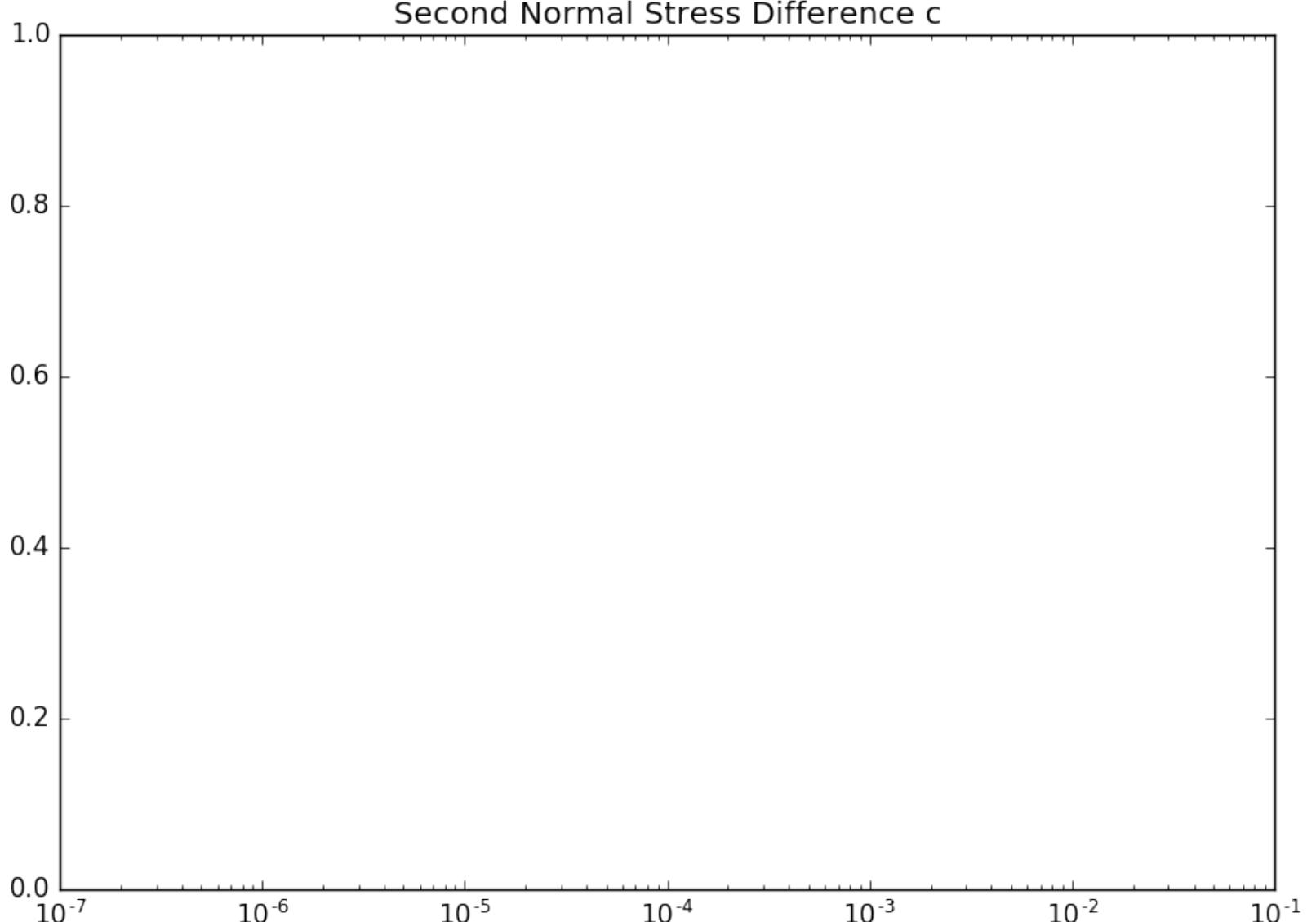




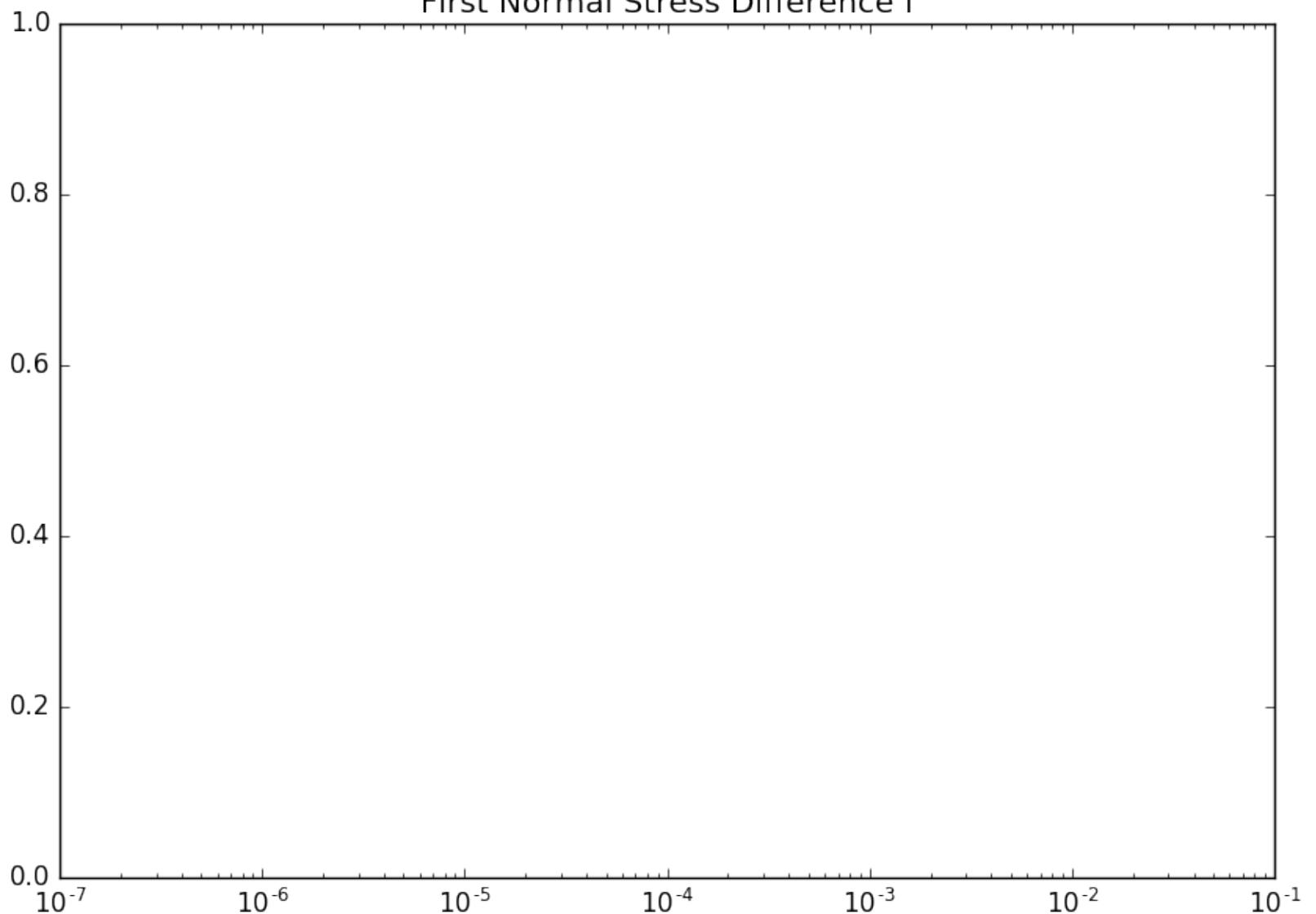
First Normal Stress Difference c



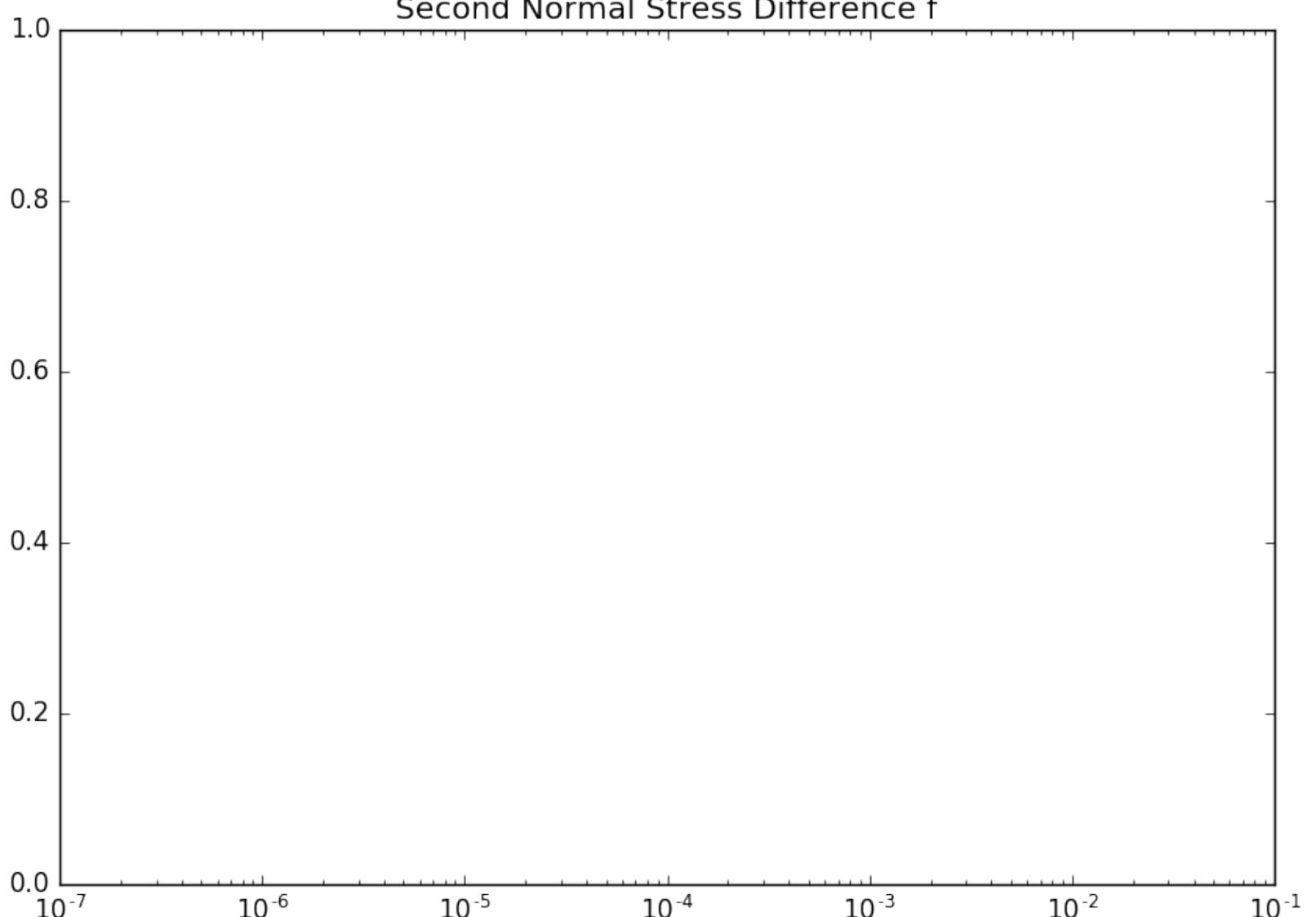
Second Normal Stress Difference c

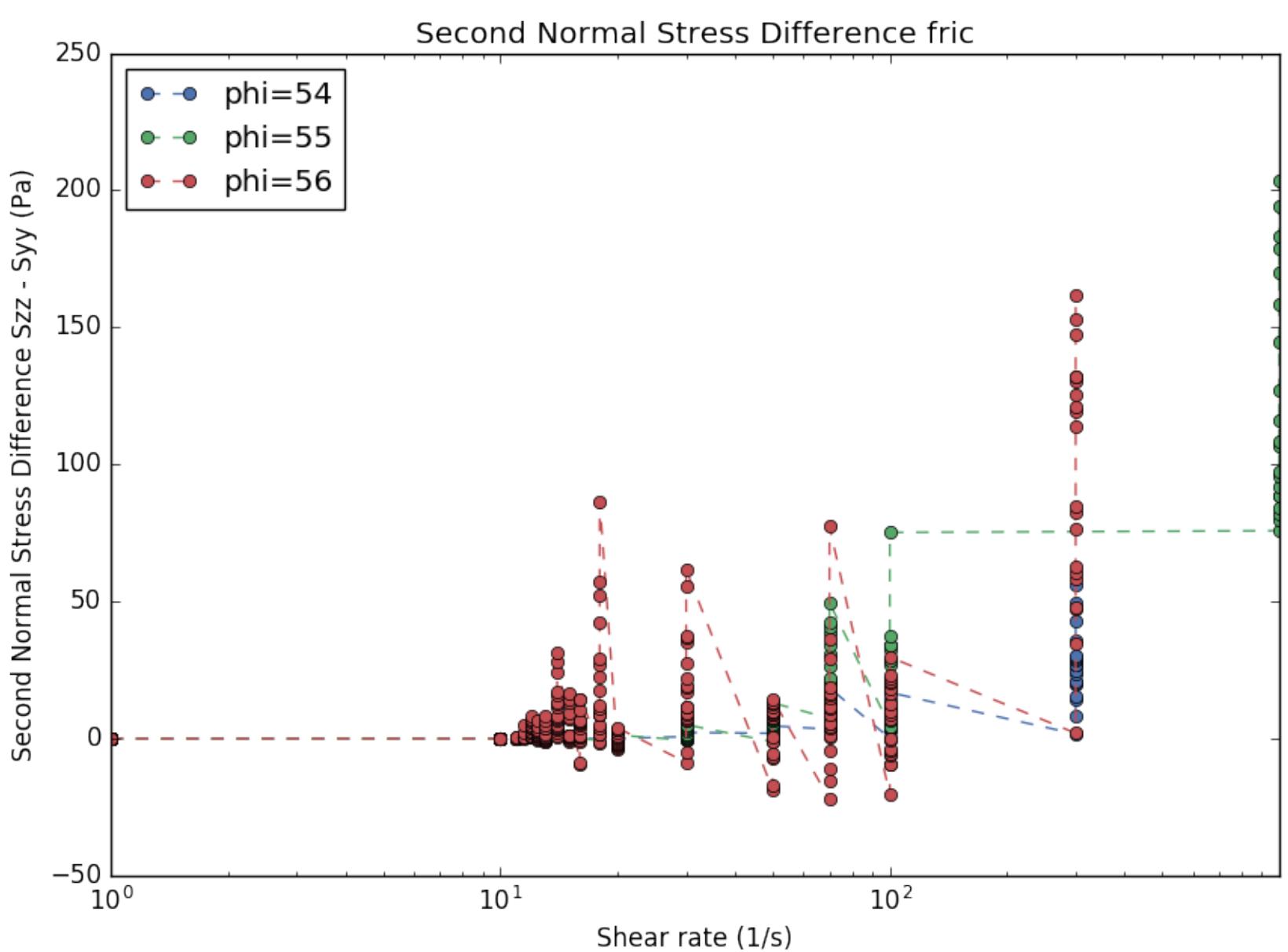
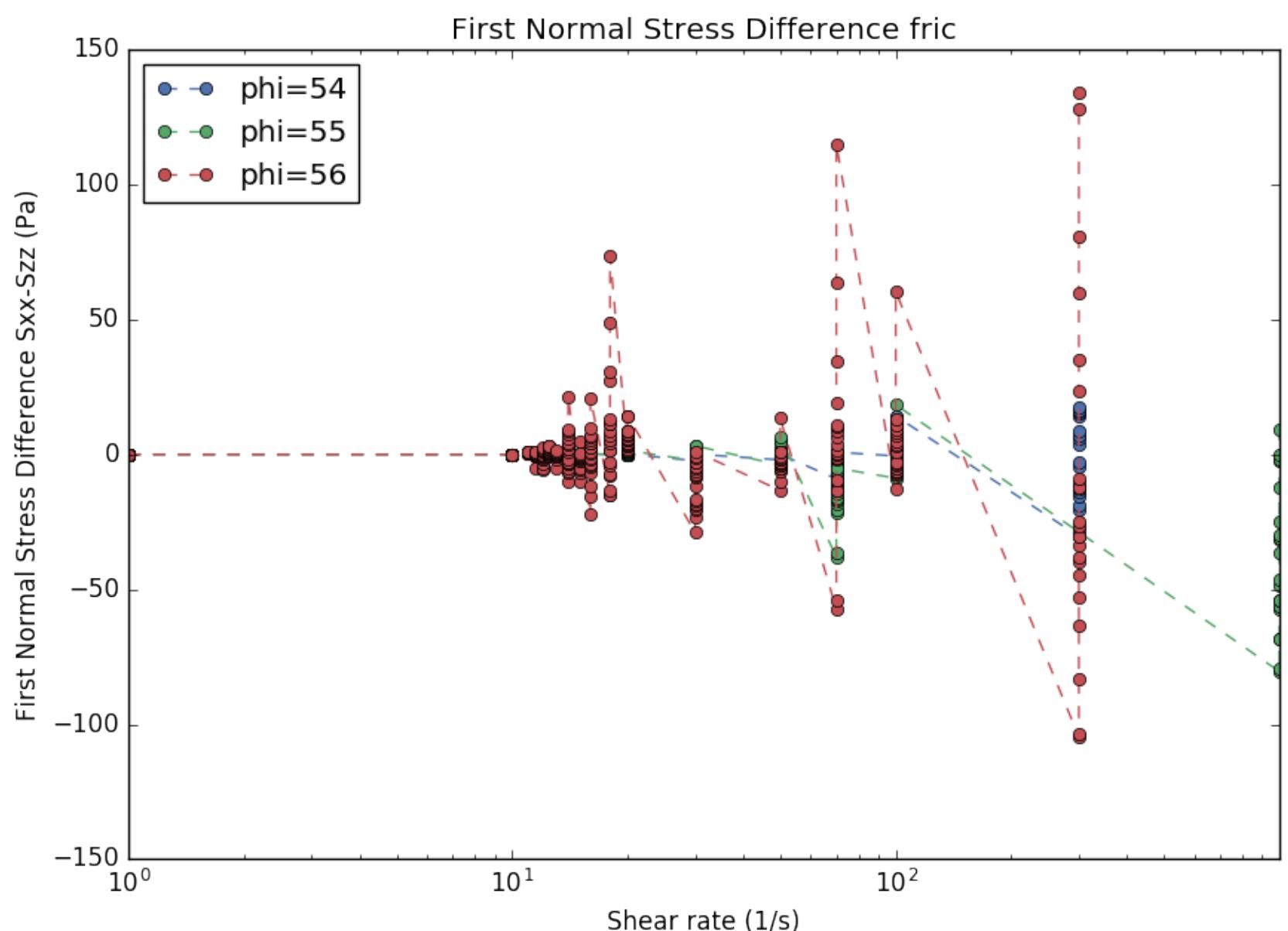


First Normal Stress Difference f

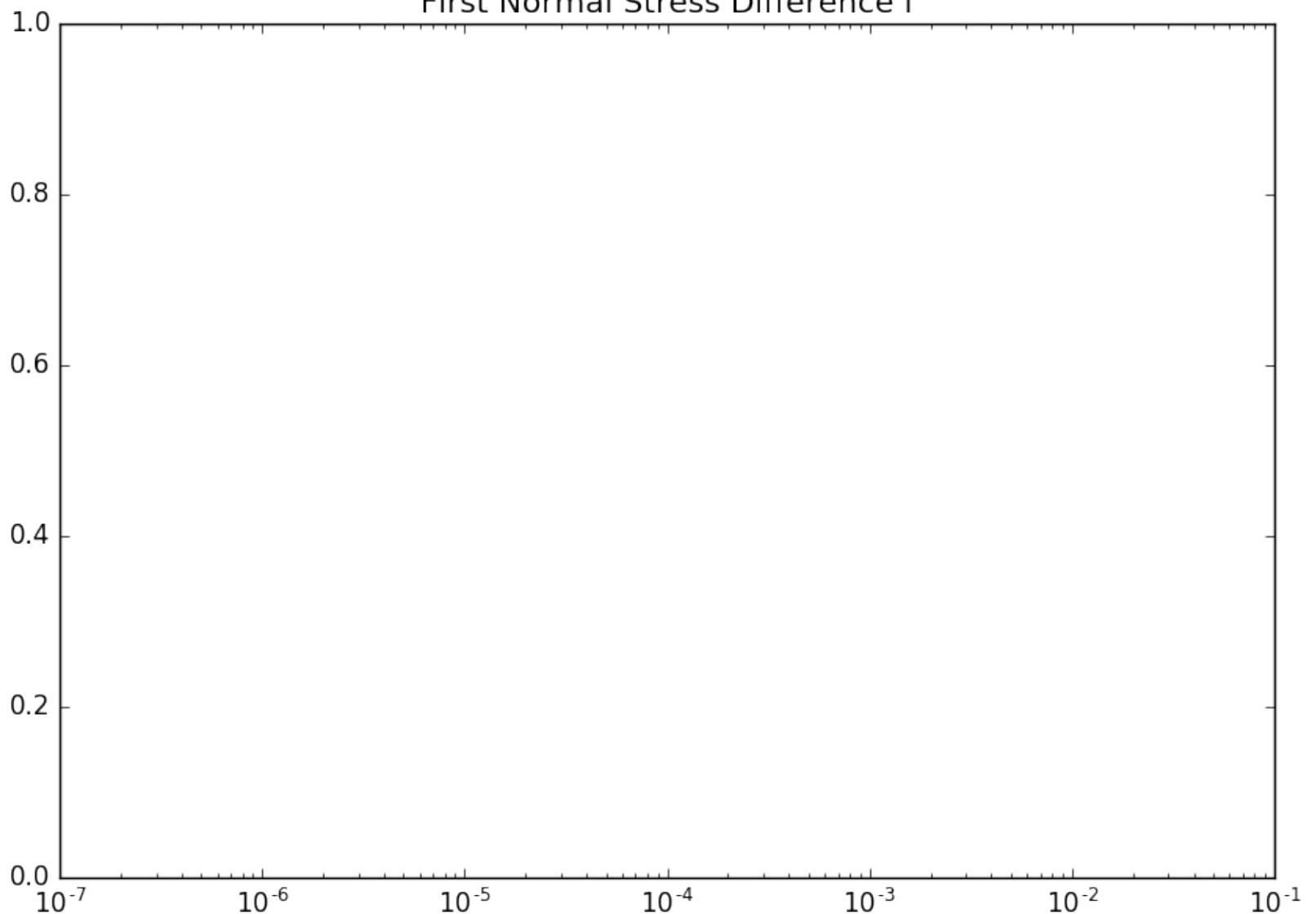


Second Normal Stress Difference f

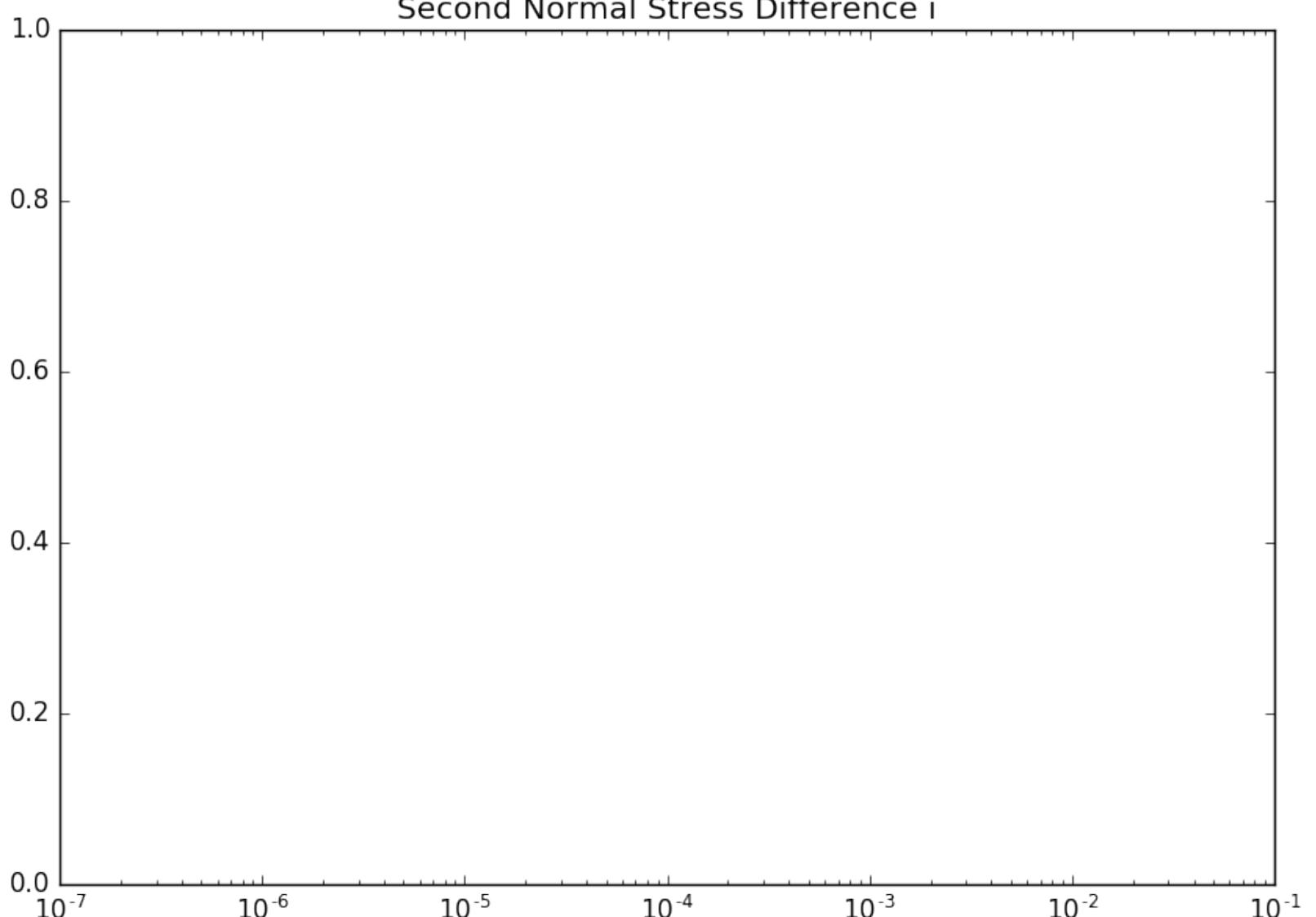


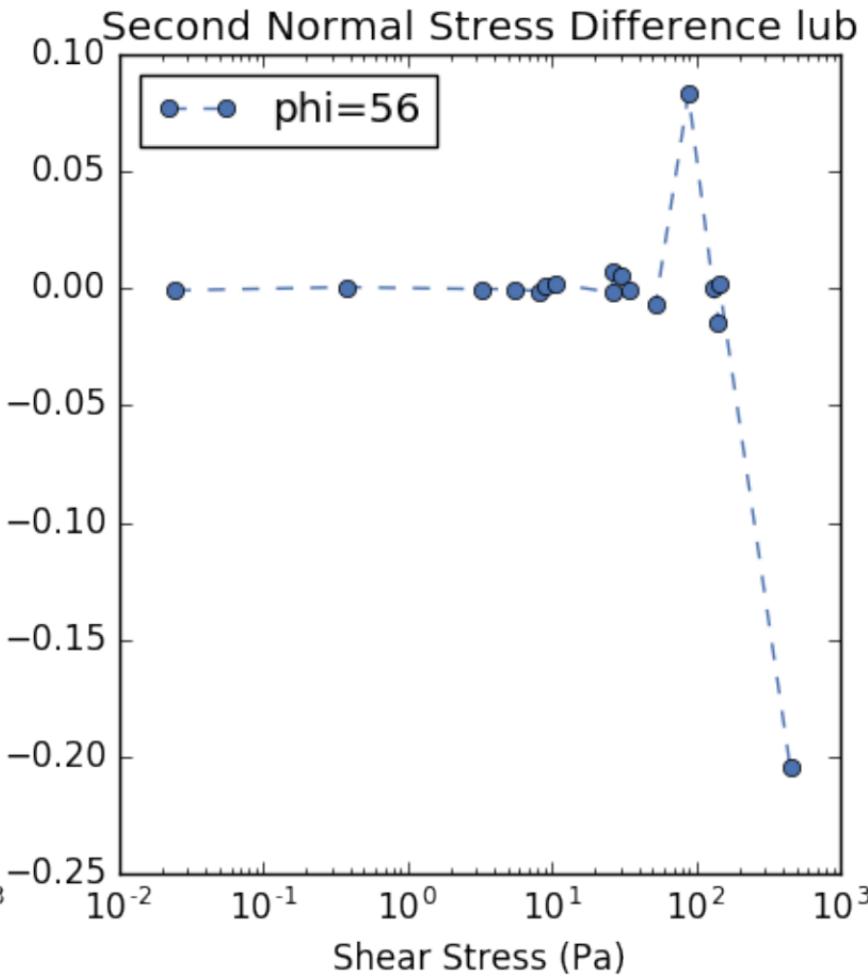
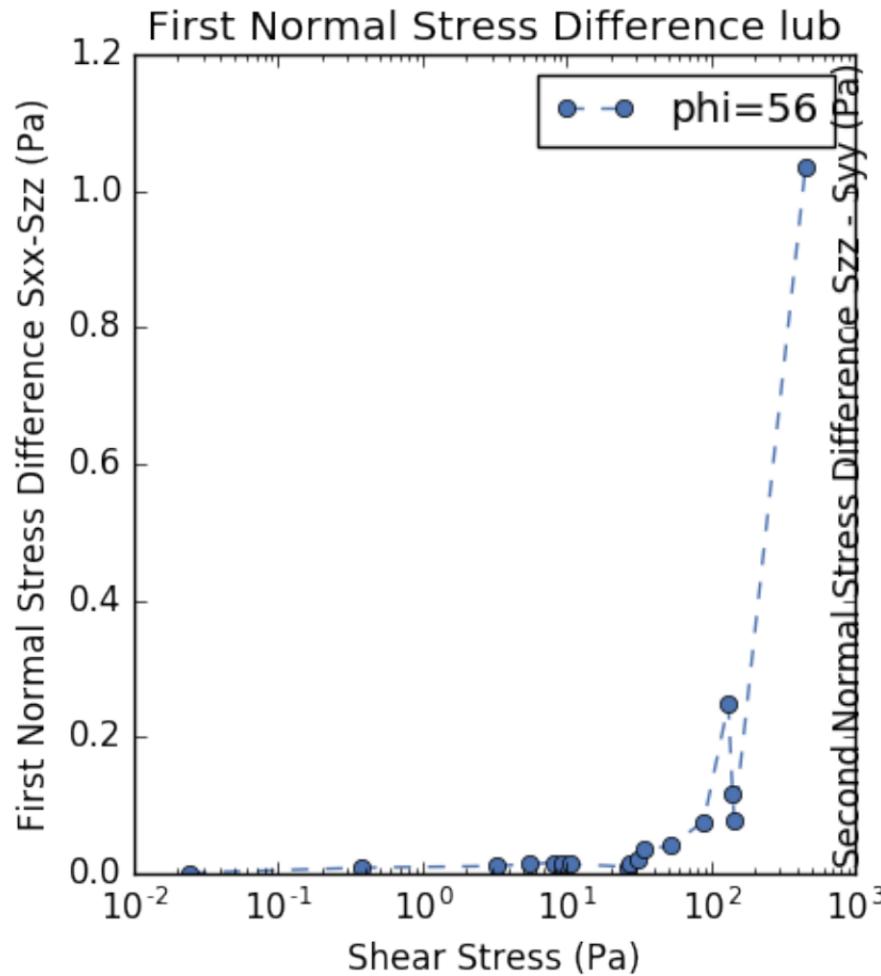


First Normal Stress Difference i

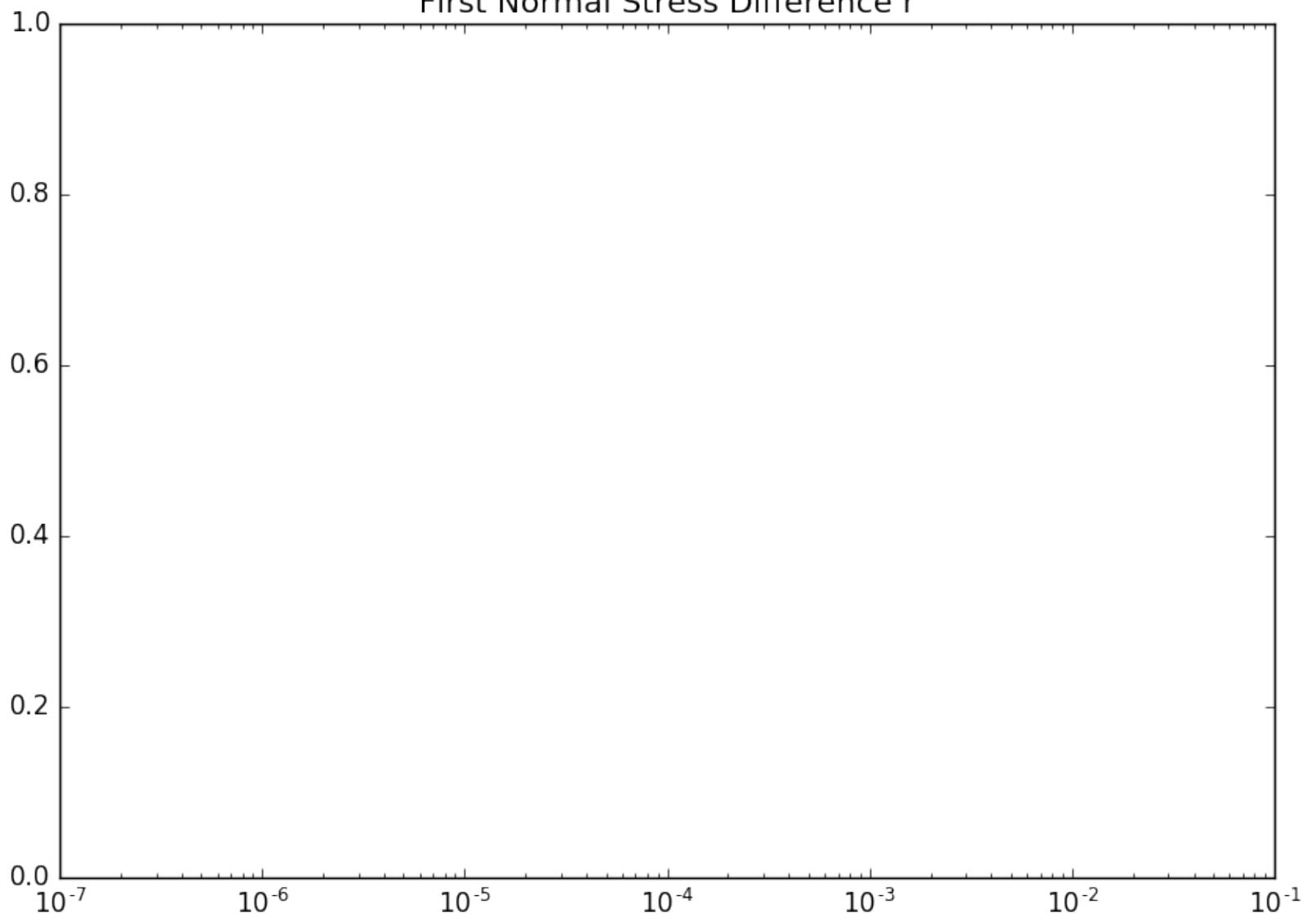


Second Normal Stress Difference i

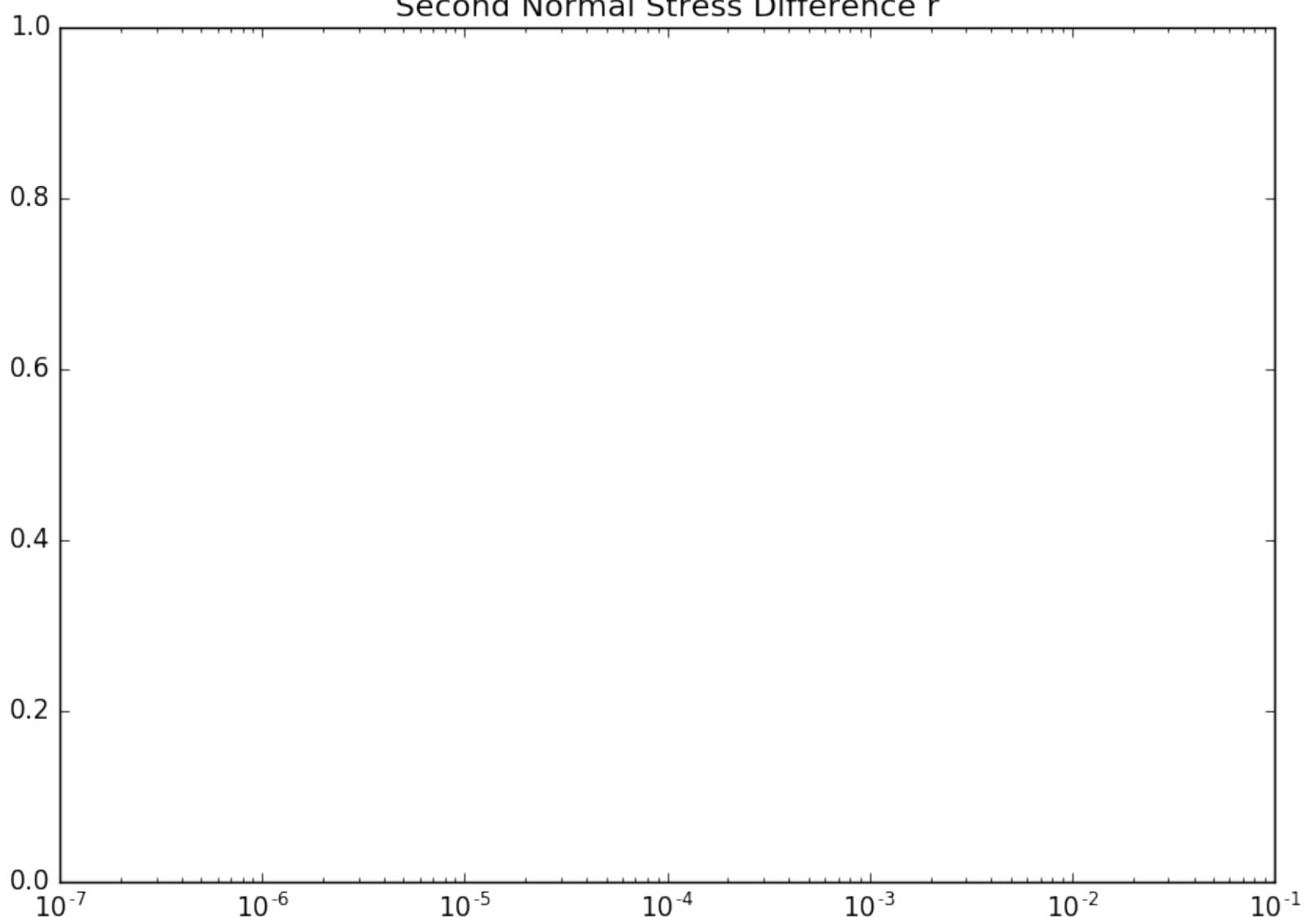


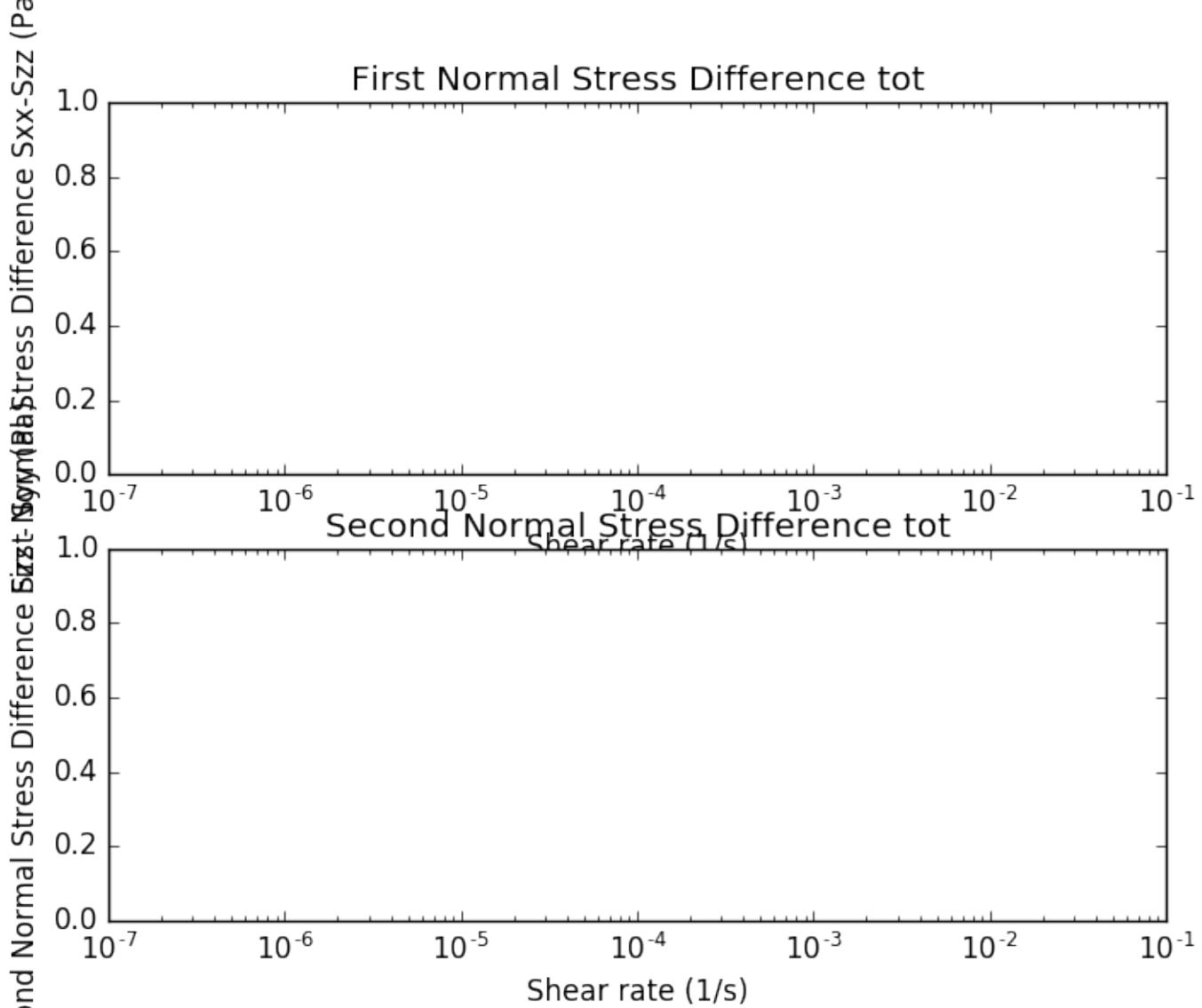


First Normal Stress Difference r

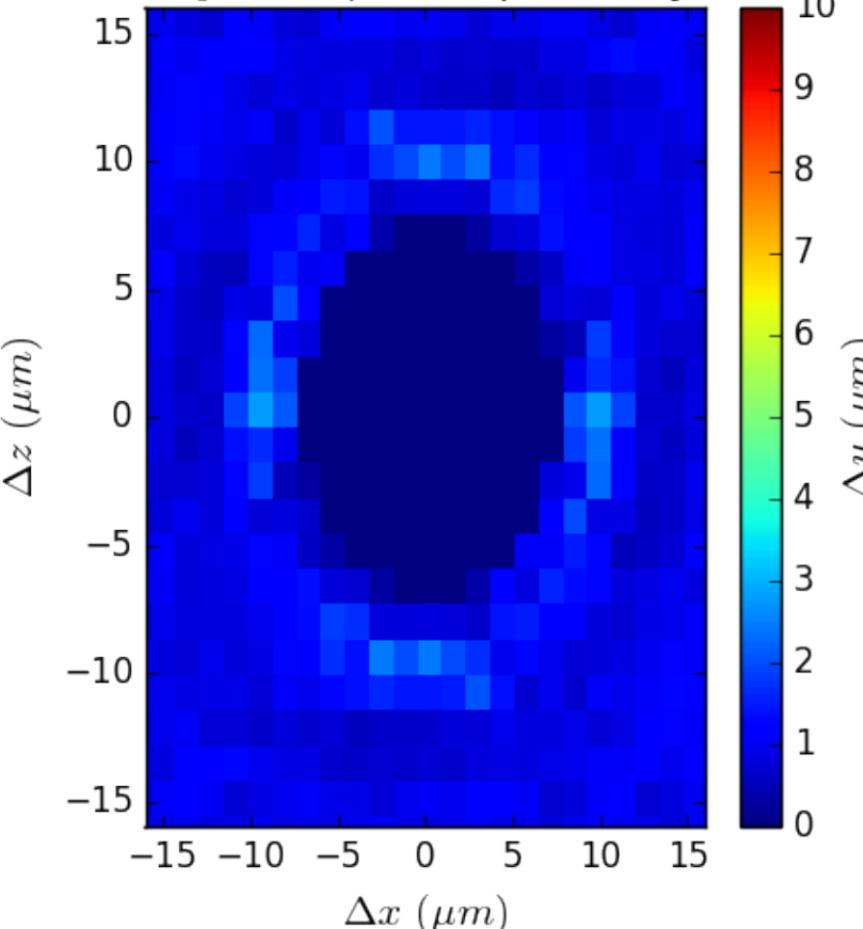


Second Normal Stress Difference r

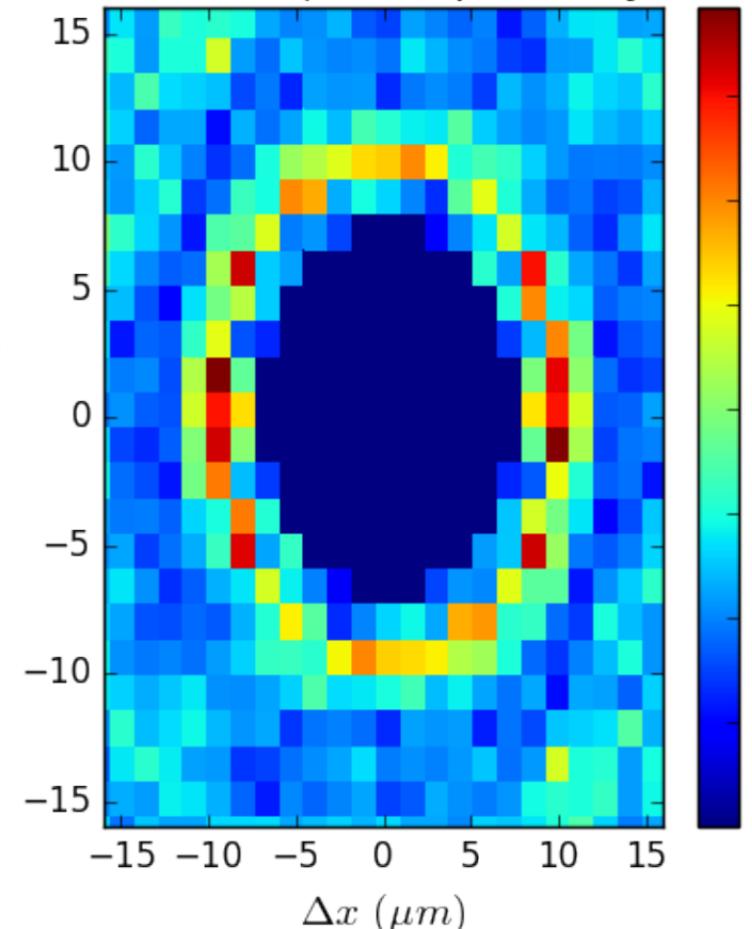




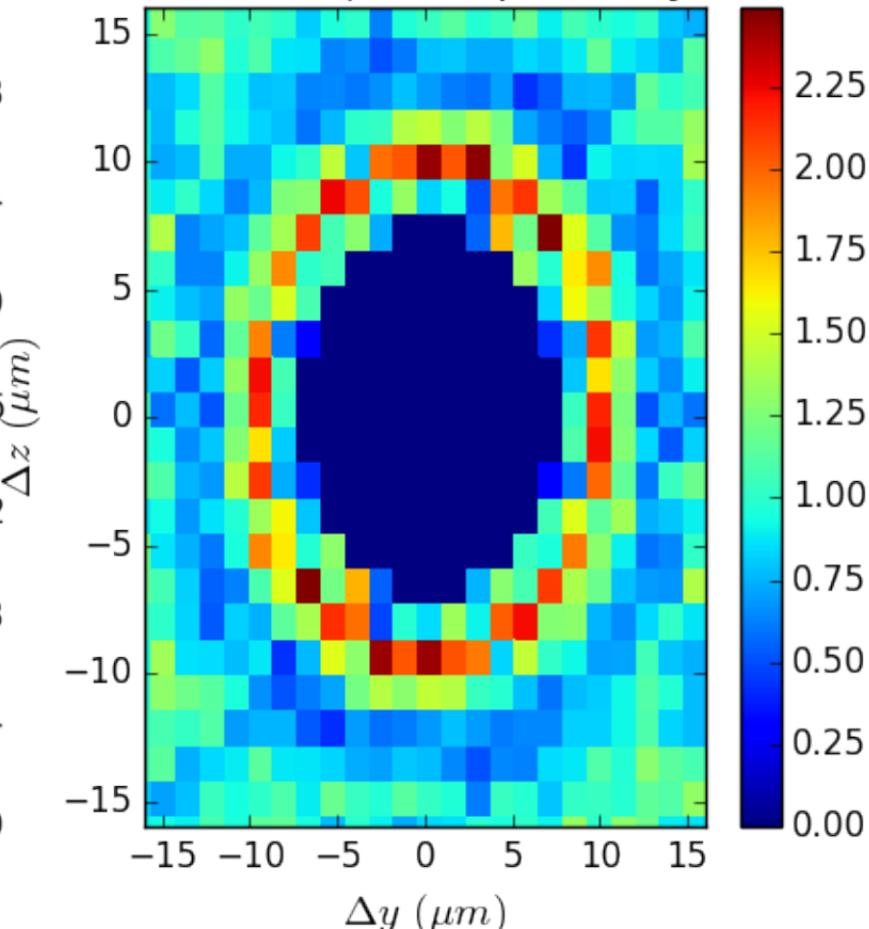
PDF at $y = 1.38\mu m$ for $\phi = 54$ $y_d = 50$



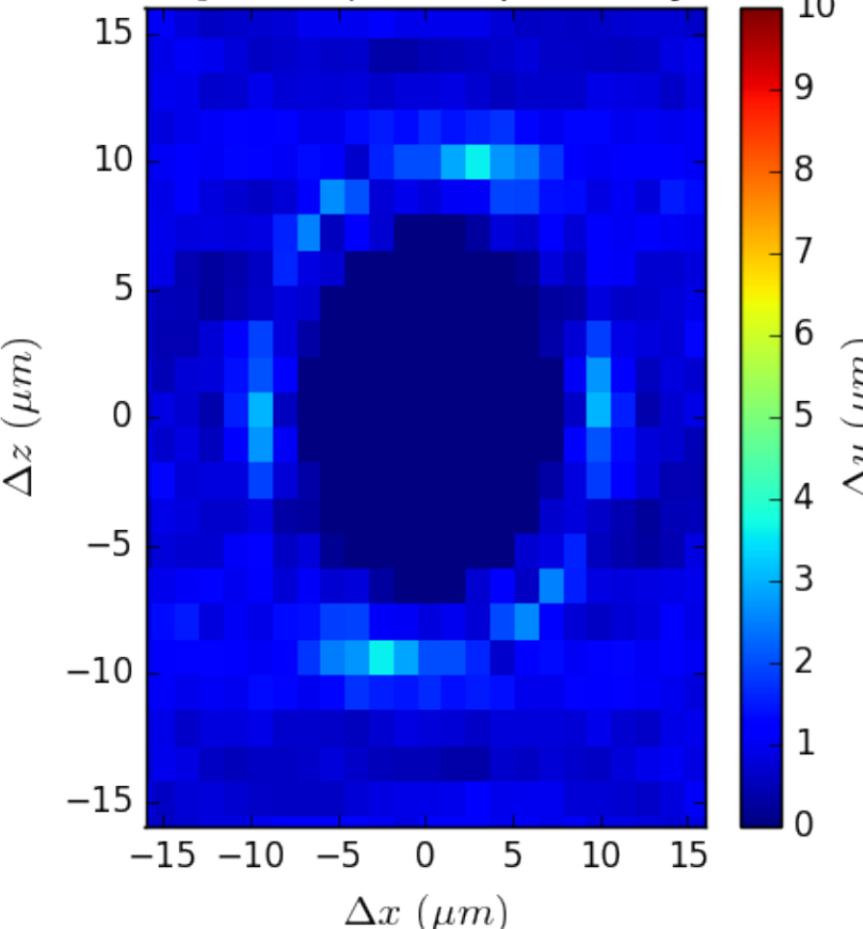
PDF at $z = 1.38\mu m$ for $\phi = 54$ $y_d = 50$



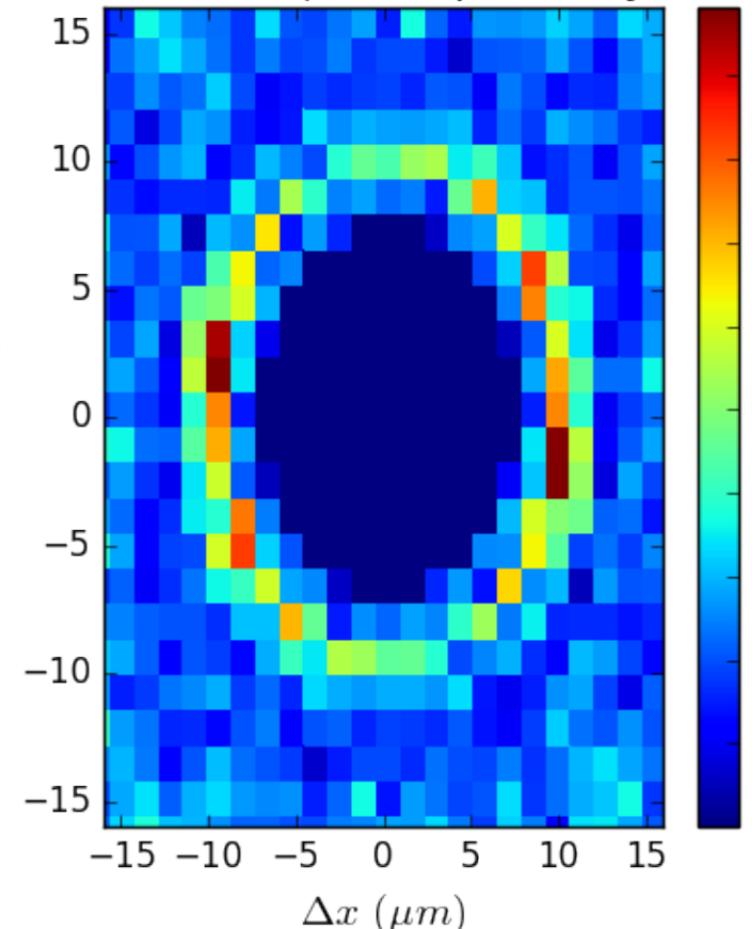
PDF at $x = 1.38\mu m$ for $\phi = 54$ $y_d = 50$



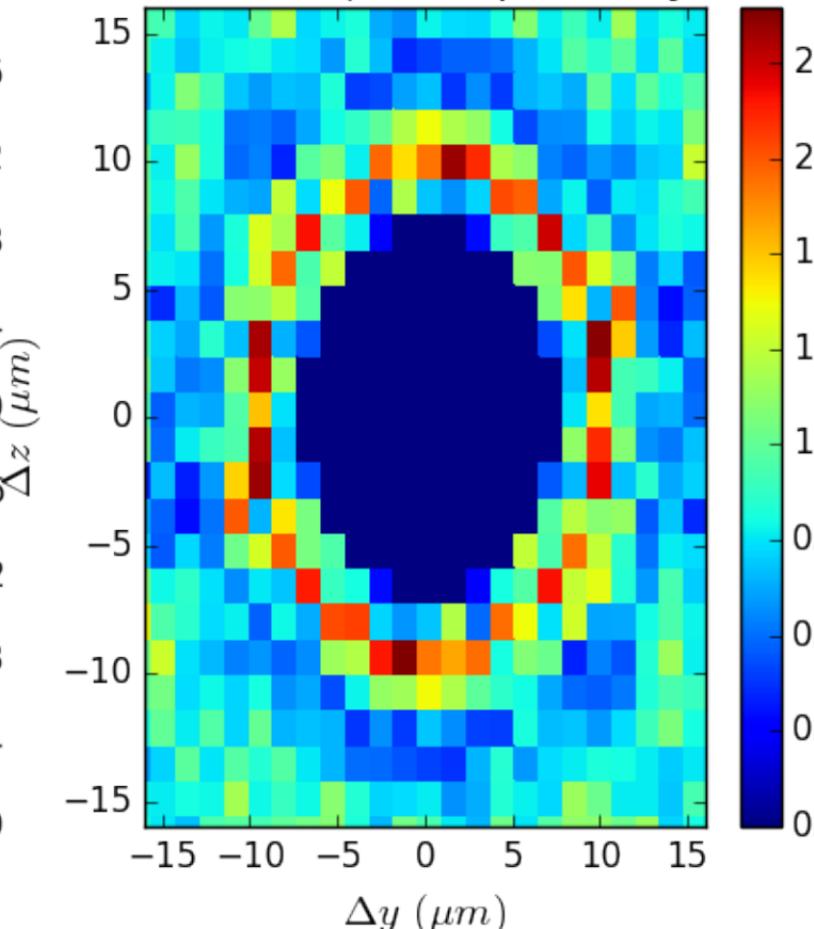
PDF at $y = 1.38\mu m$ for $\phi = 55$ $y_d = 10$

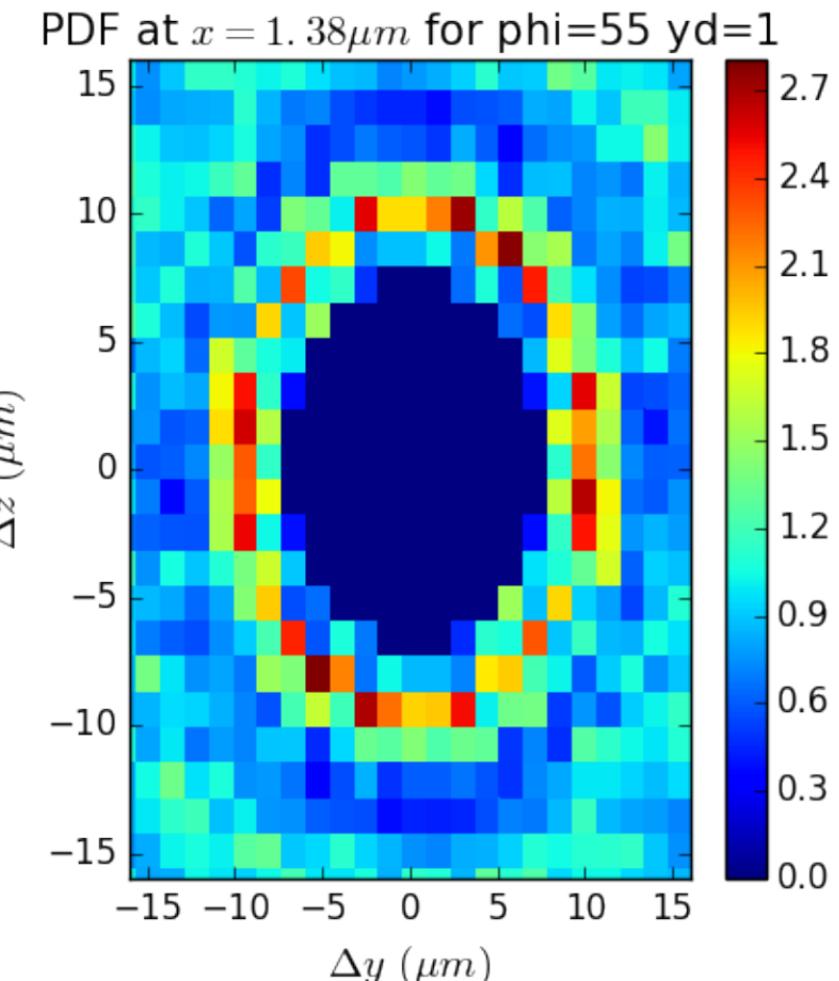
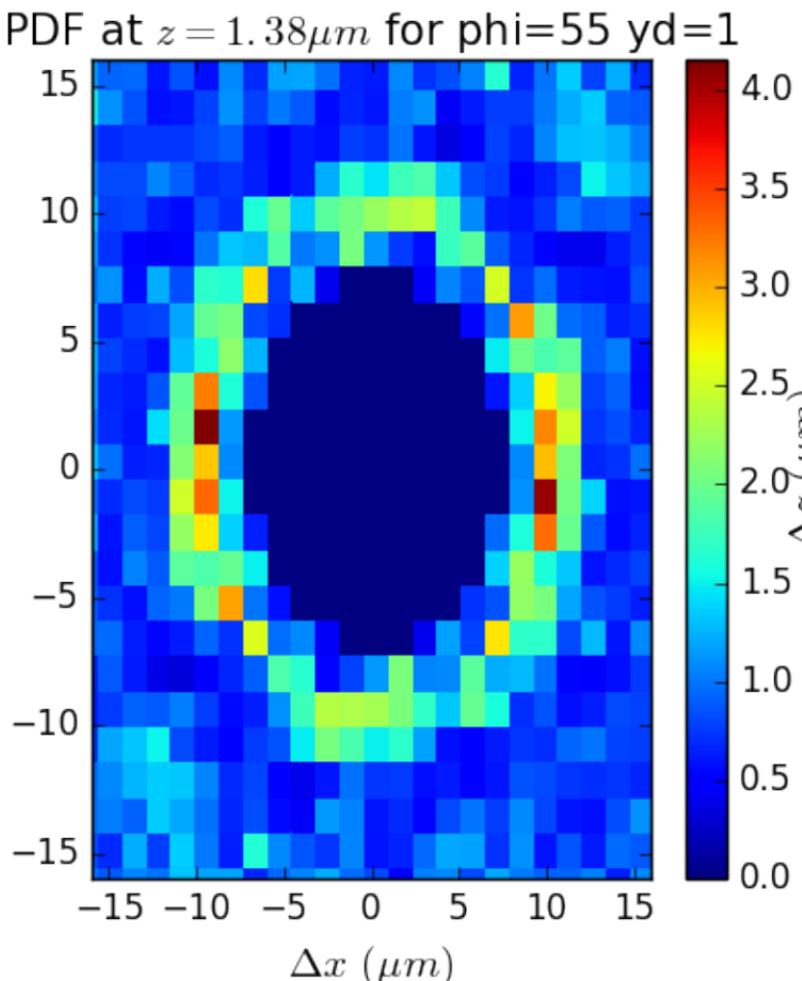
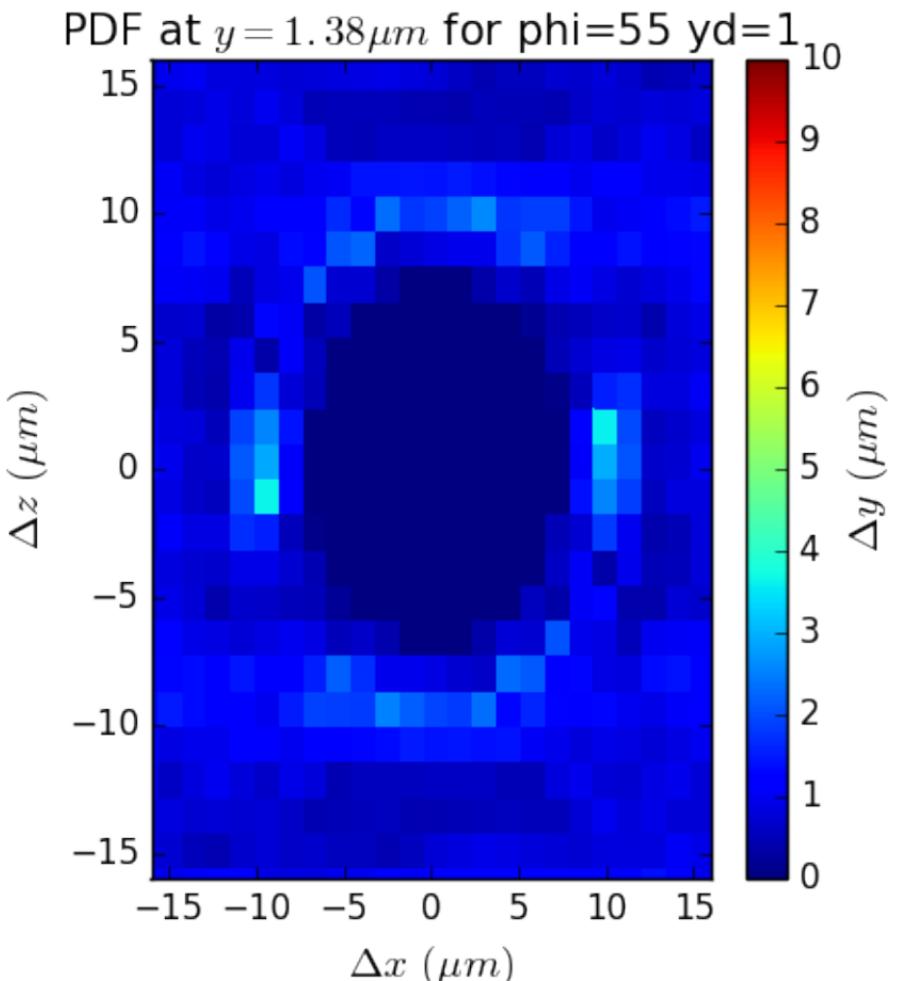


PDF at $z = 1.38\mu m$ for $\phi = 55$ $y_d = 10$

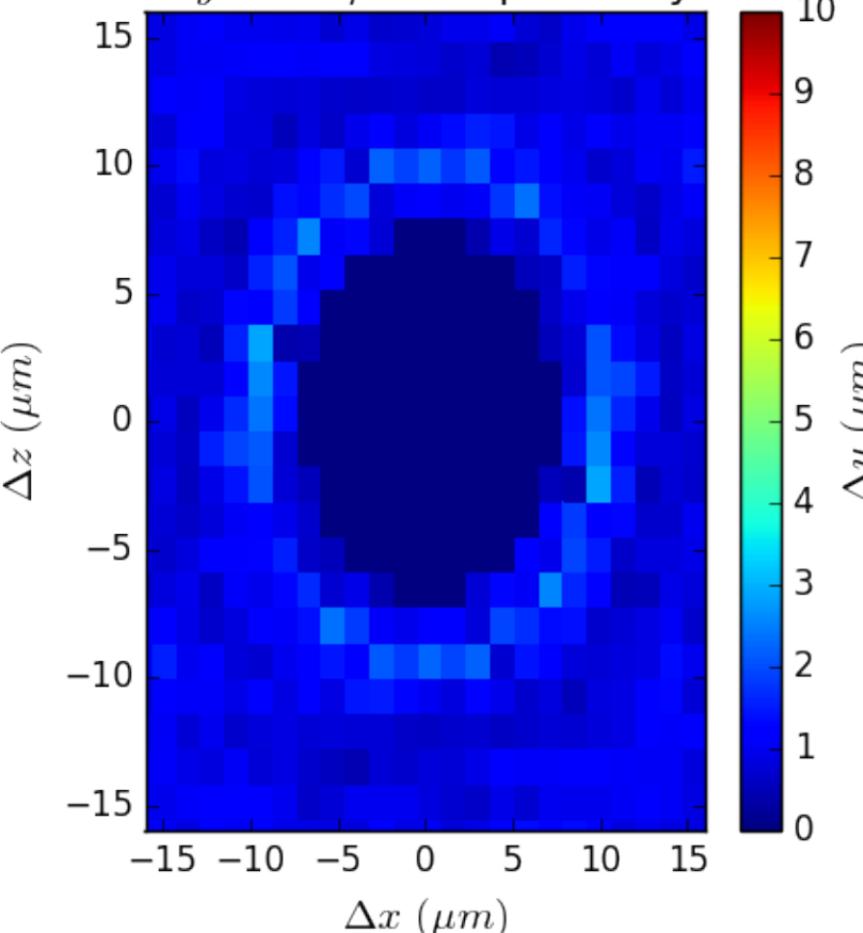


PDF at $x = 1.38\mu m$ for $\phi = 55$ $y_d = 10$

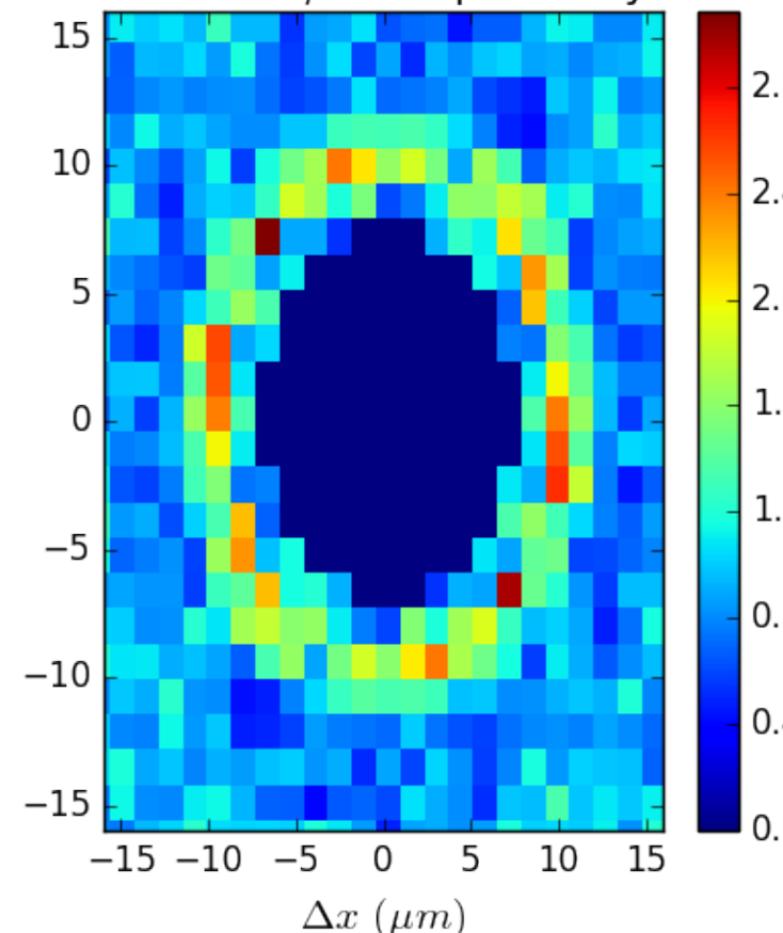




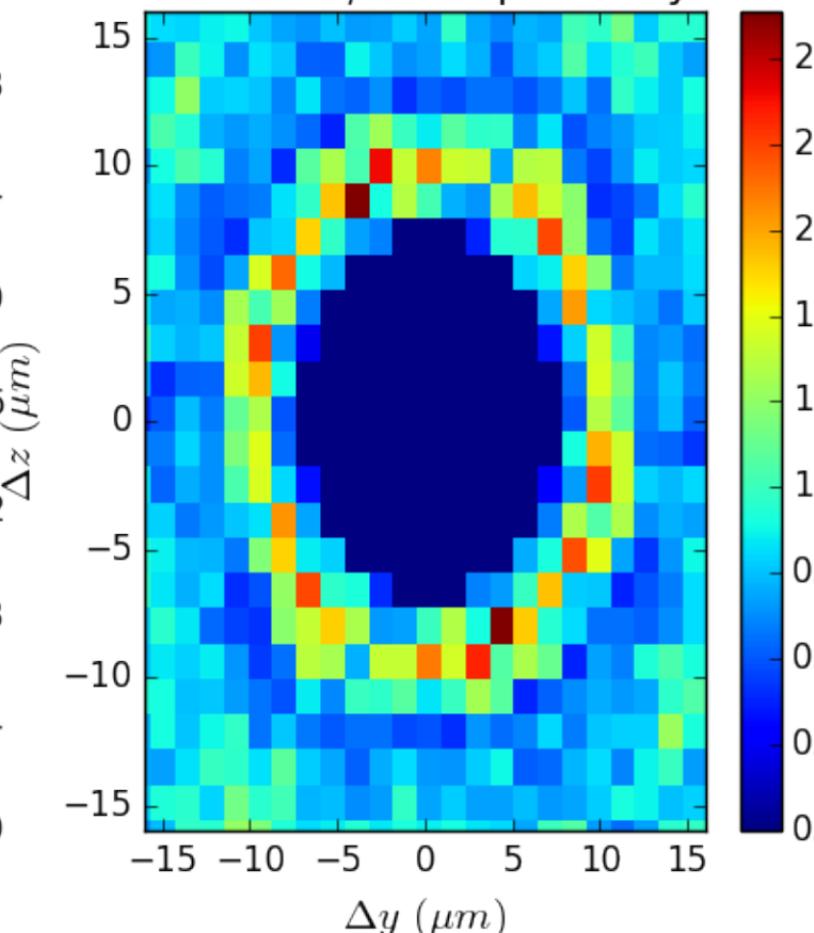
PDF at $y = 1.38\mu m$ for $\phi = 55$ $y_d = 70$

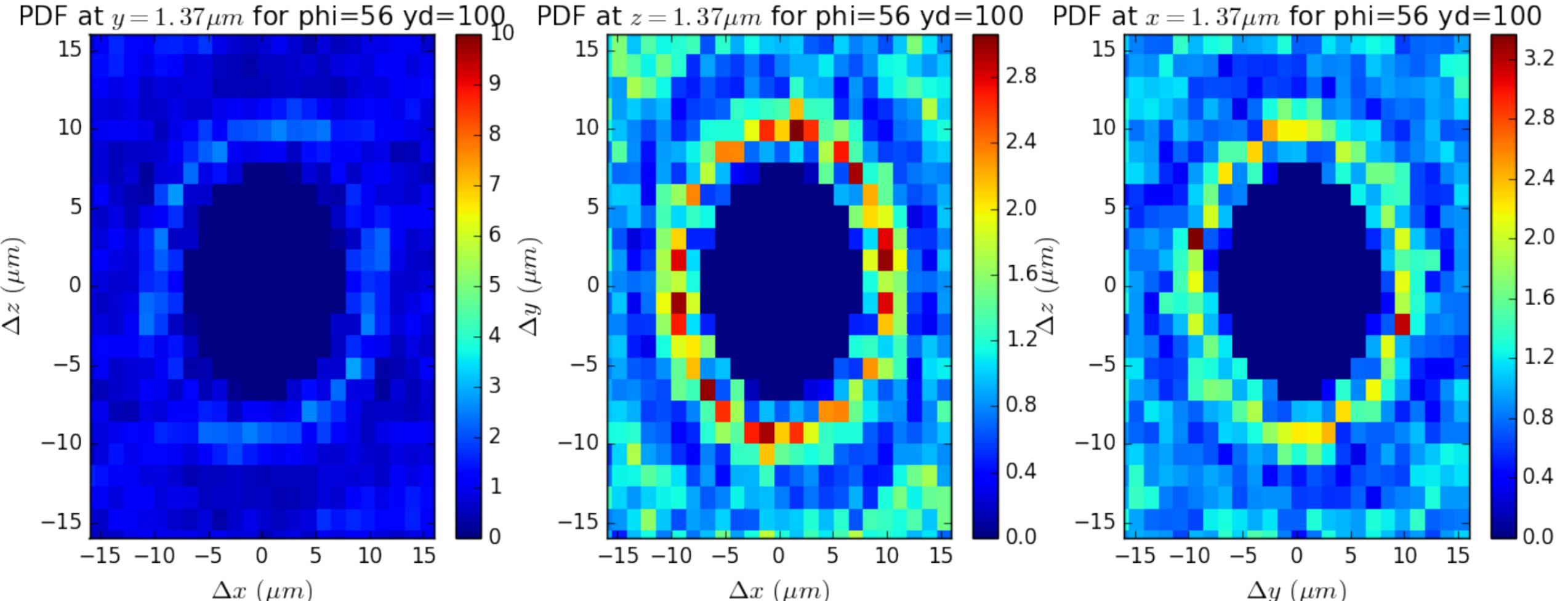


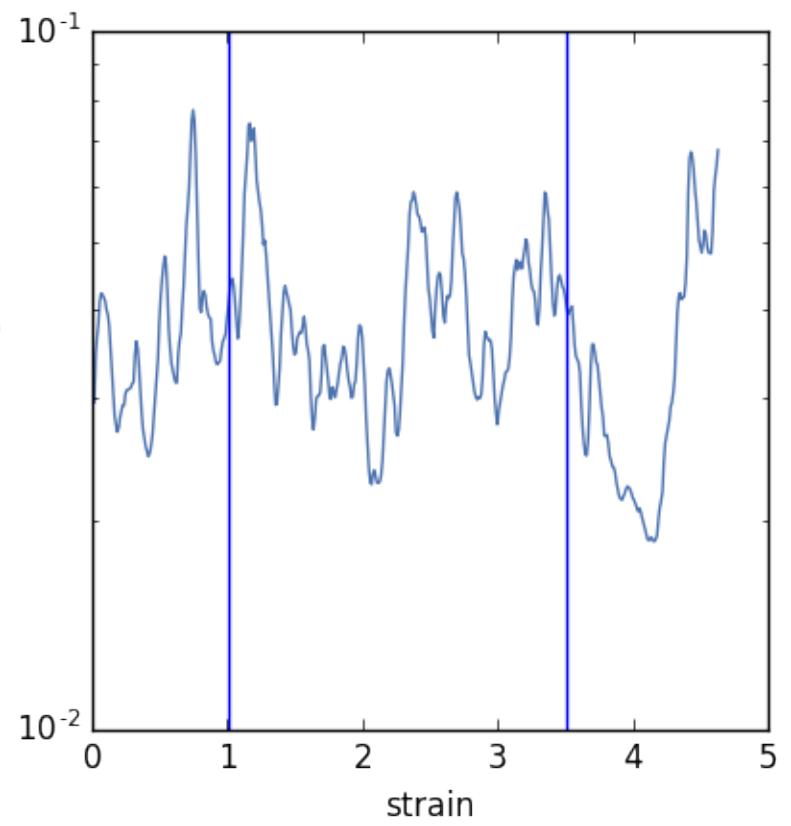
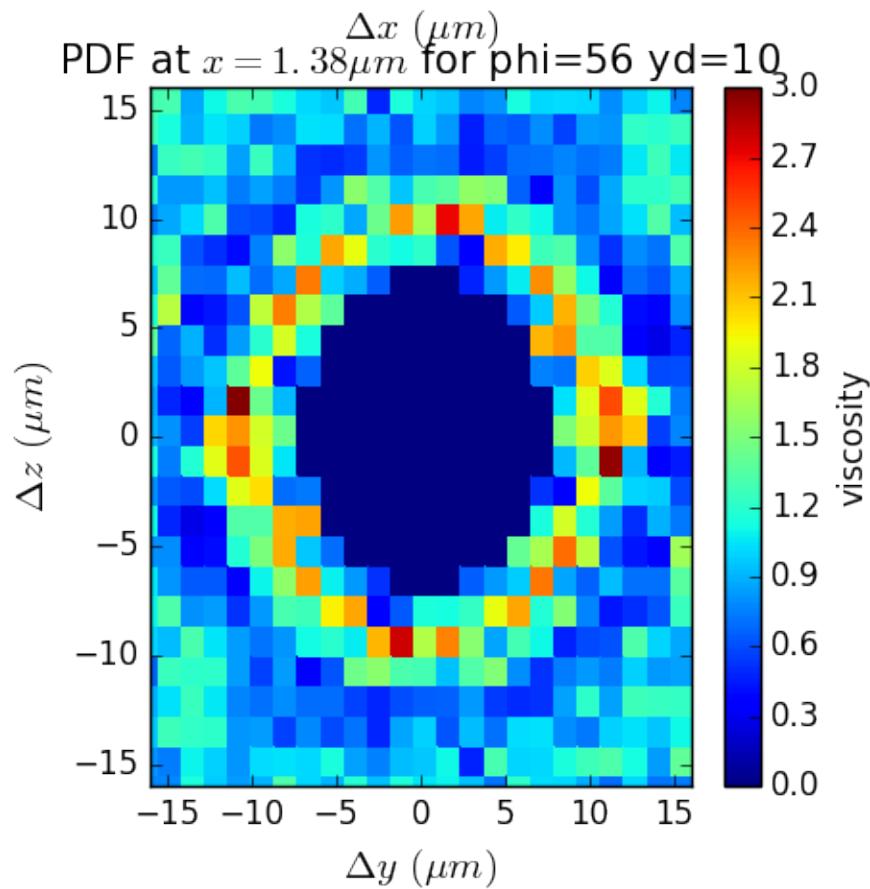
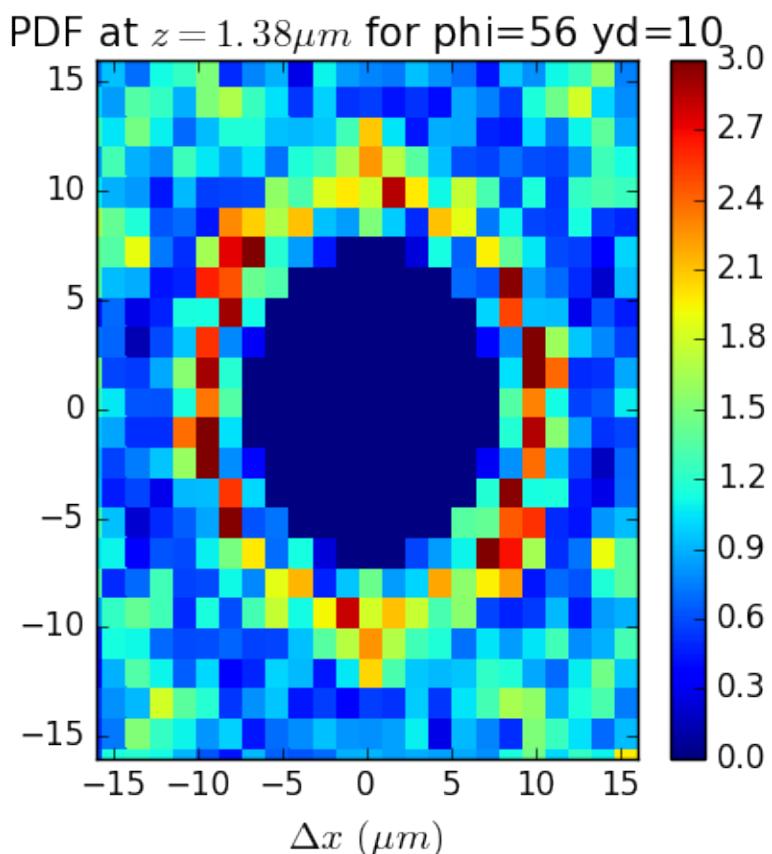
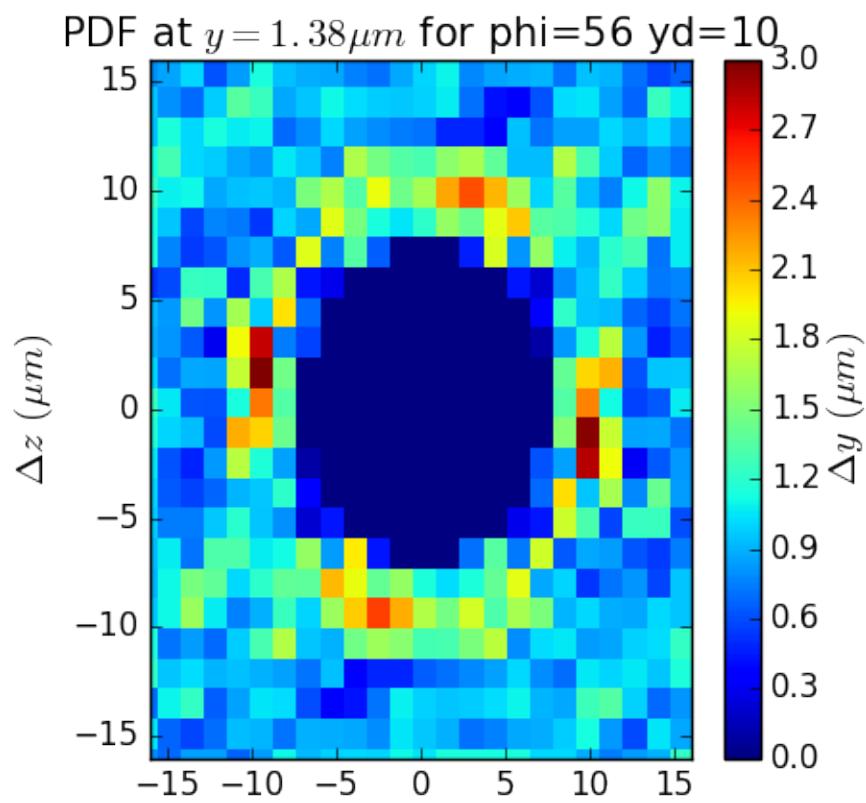
PDF at $z = 1.38\mu m$ for $\phi = 55$ $y_d = 70$

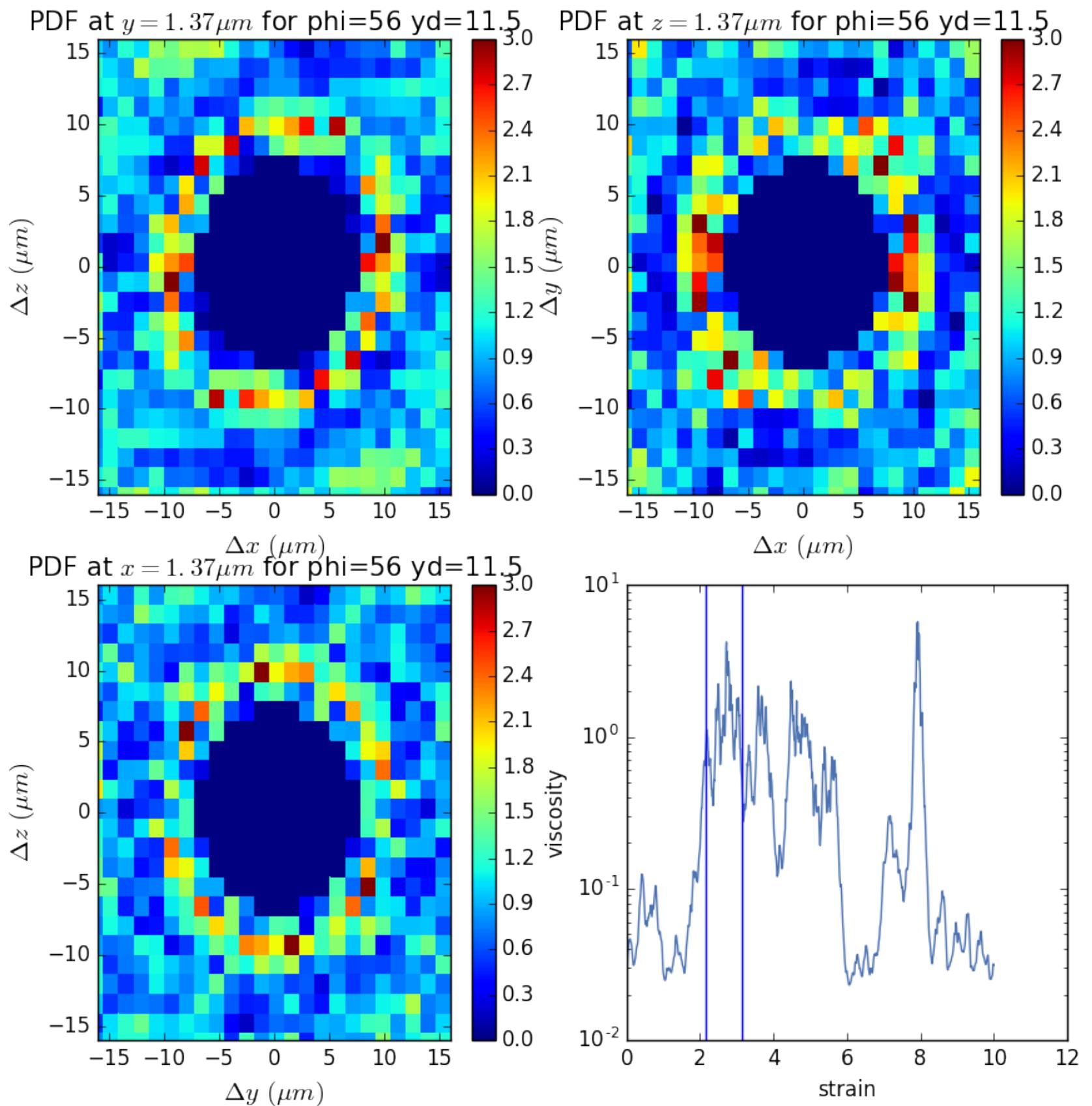


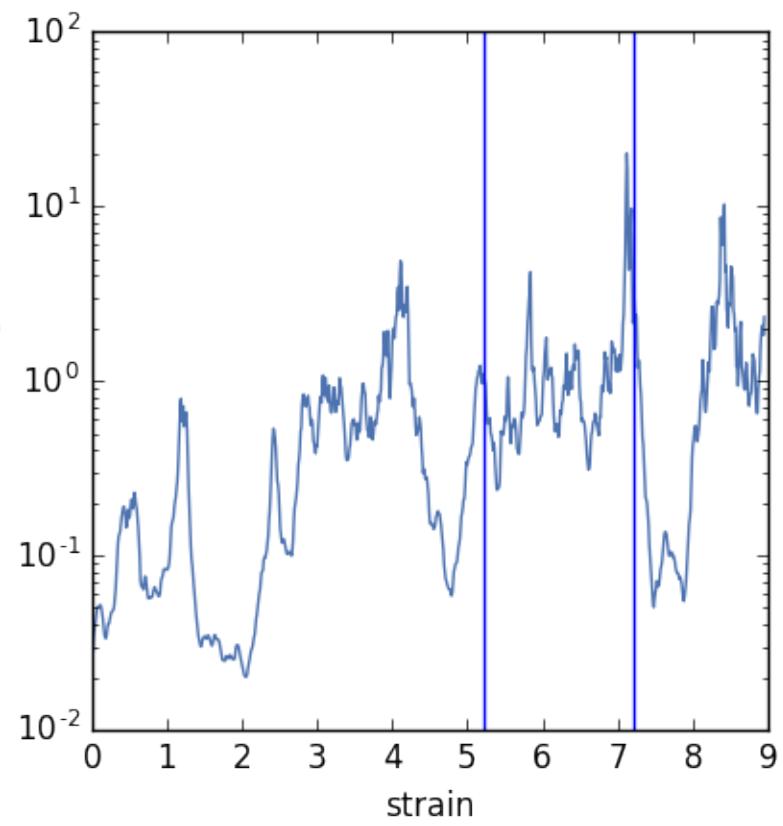
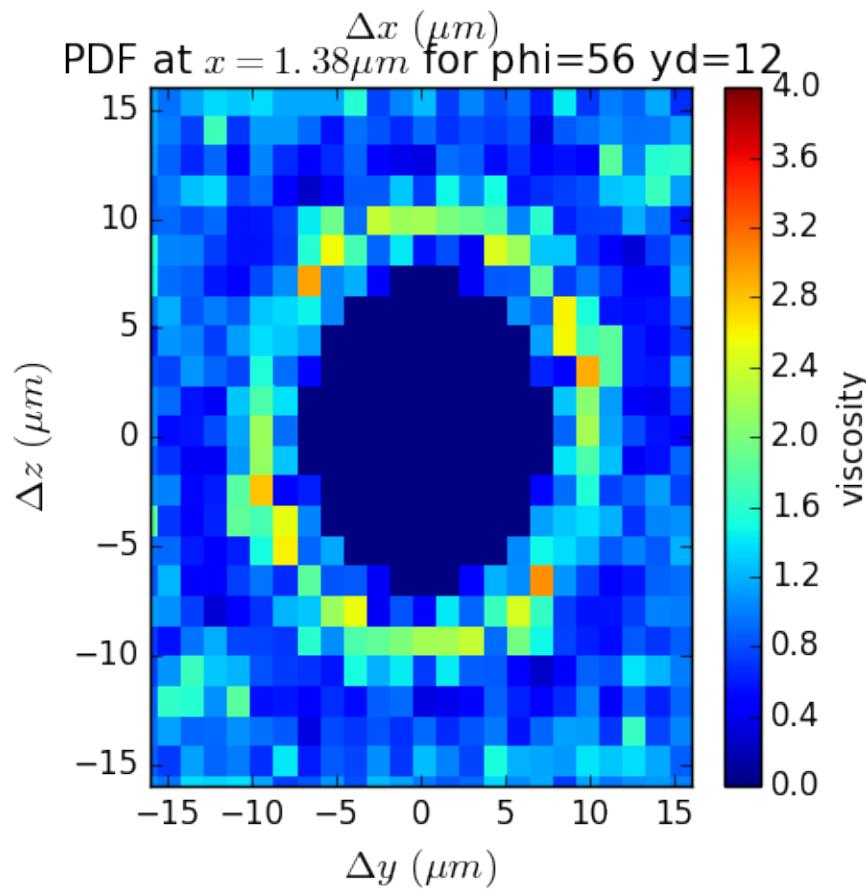
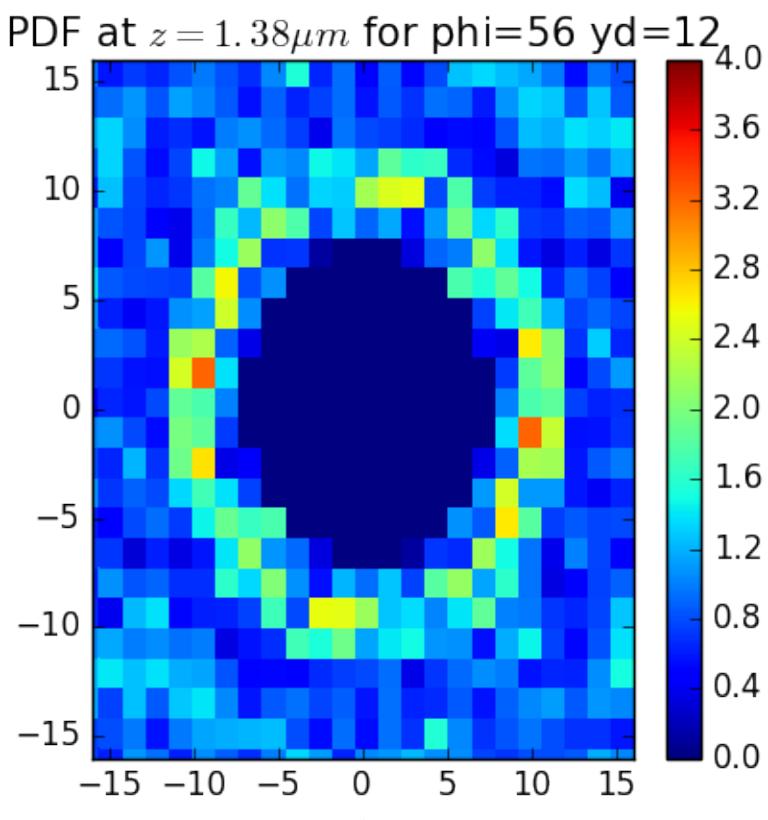
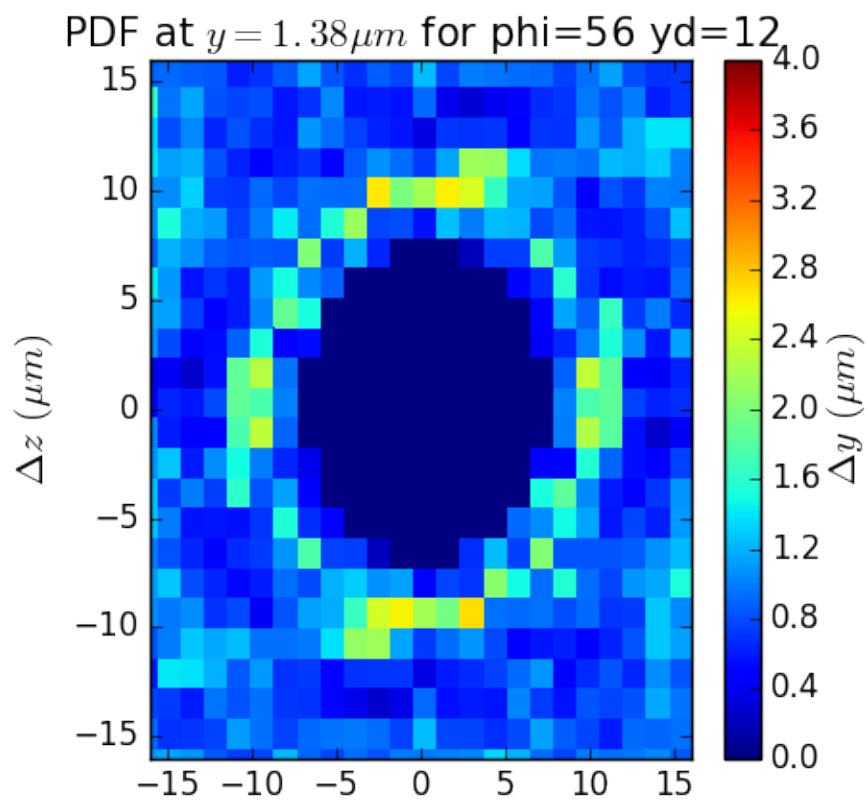
PDF at $x = 1.38\mu m$ for $\phi = 55$ $y_d = 70$

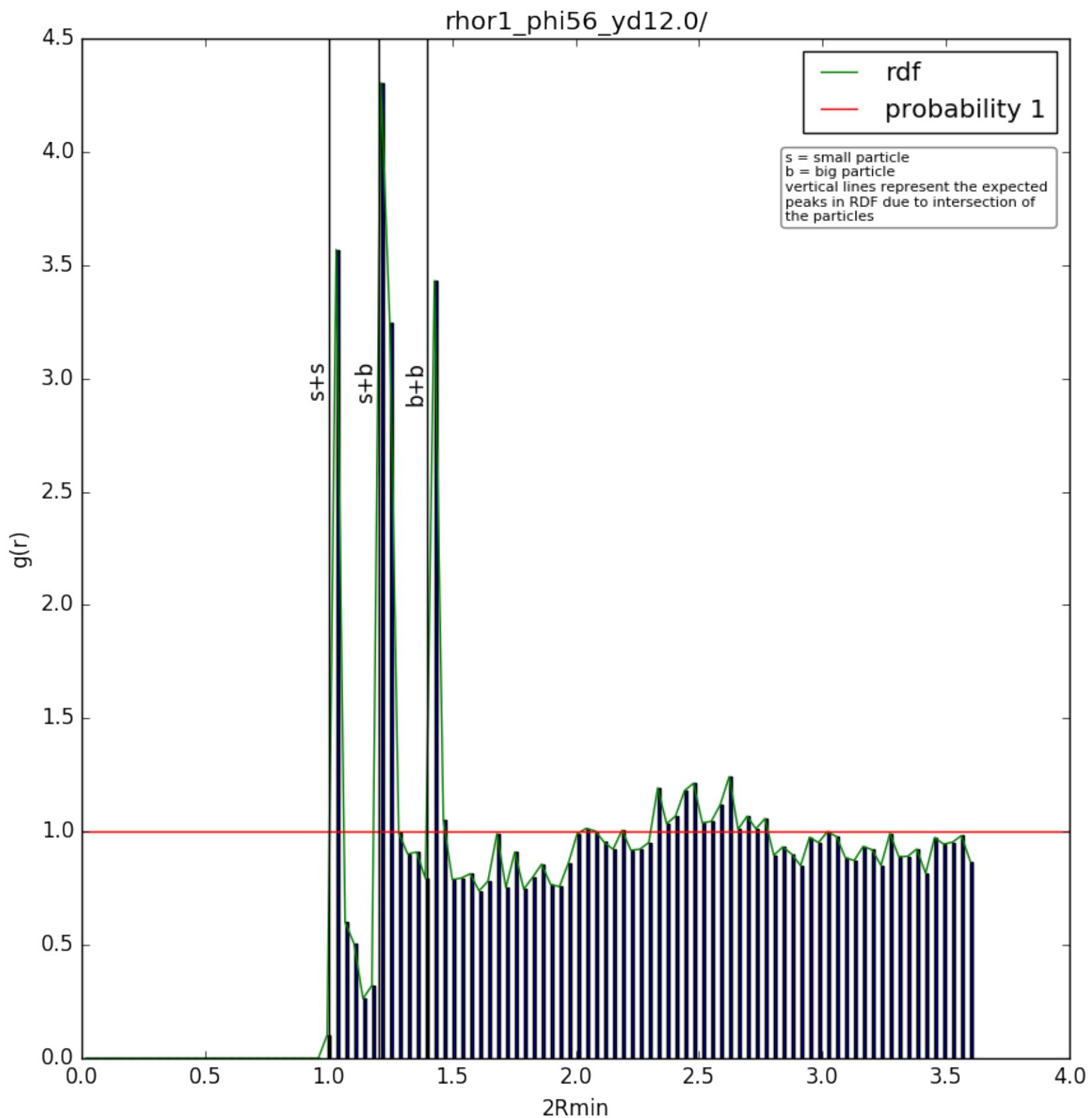


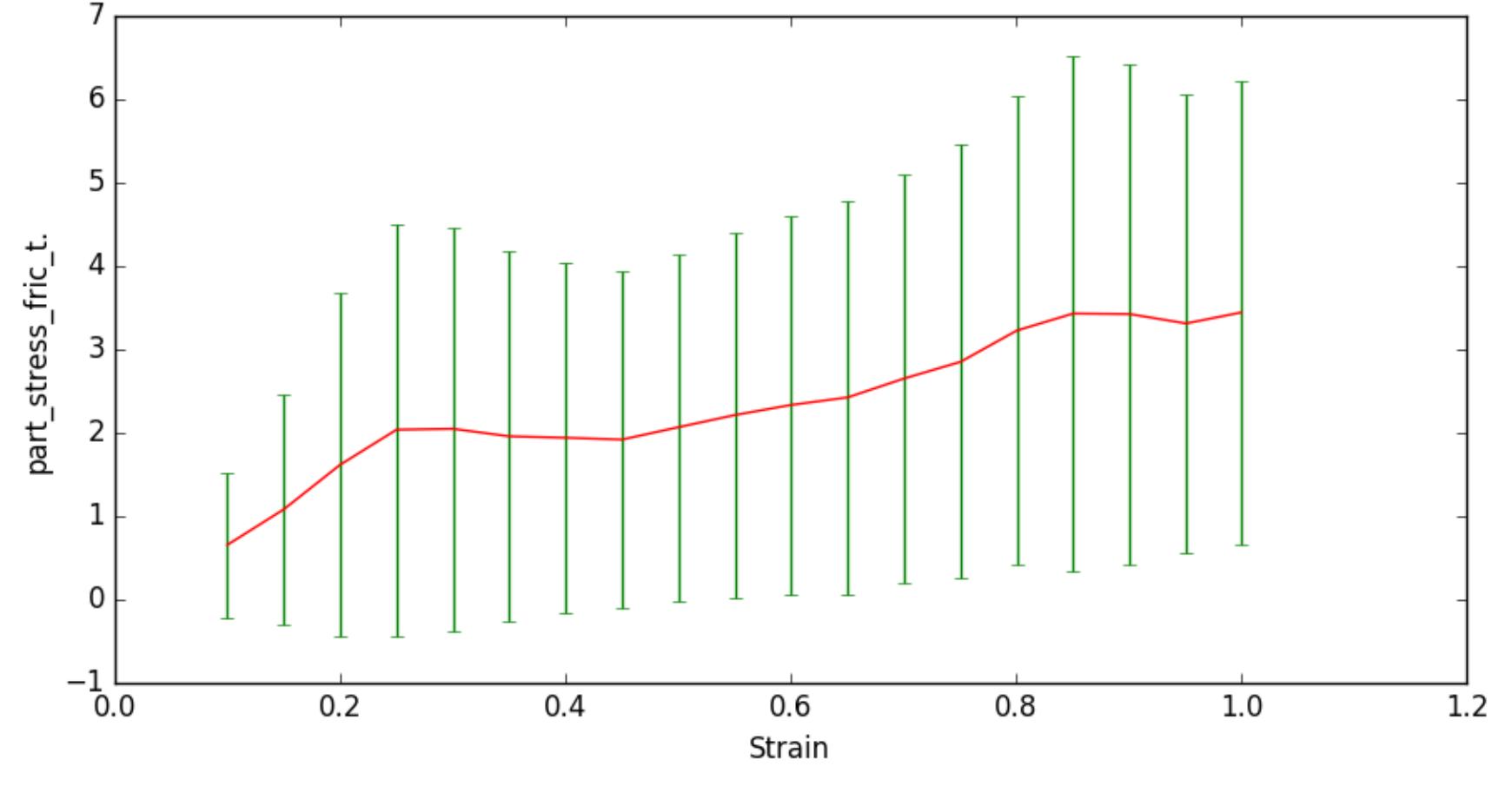
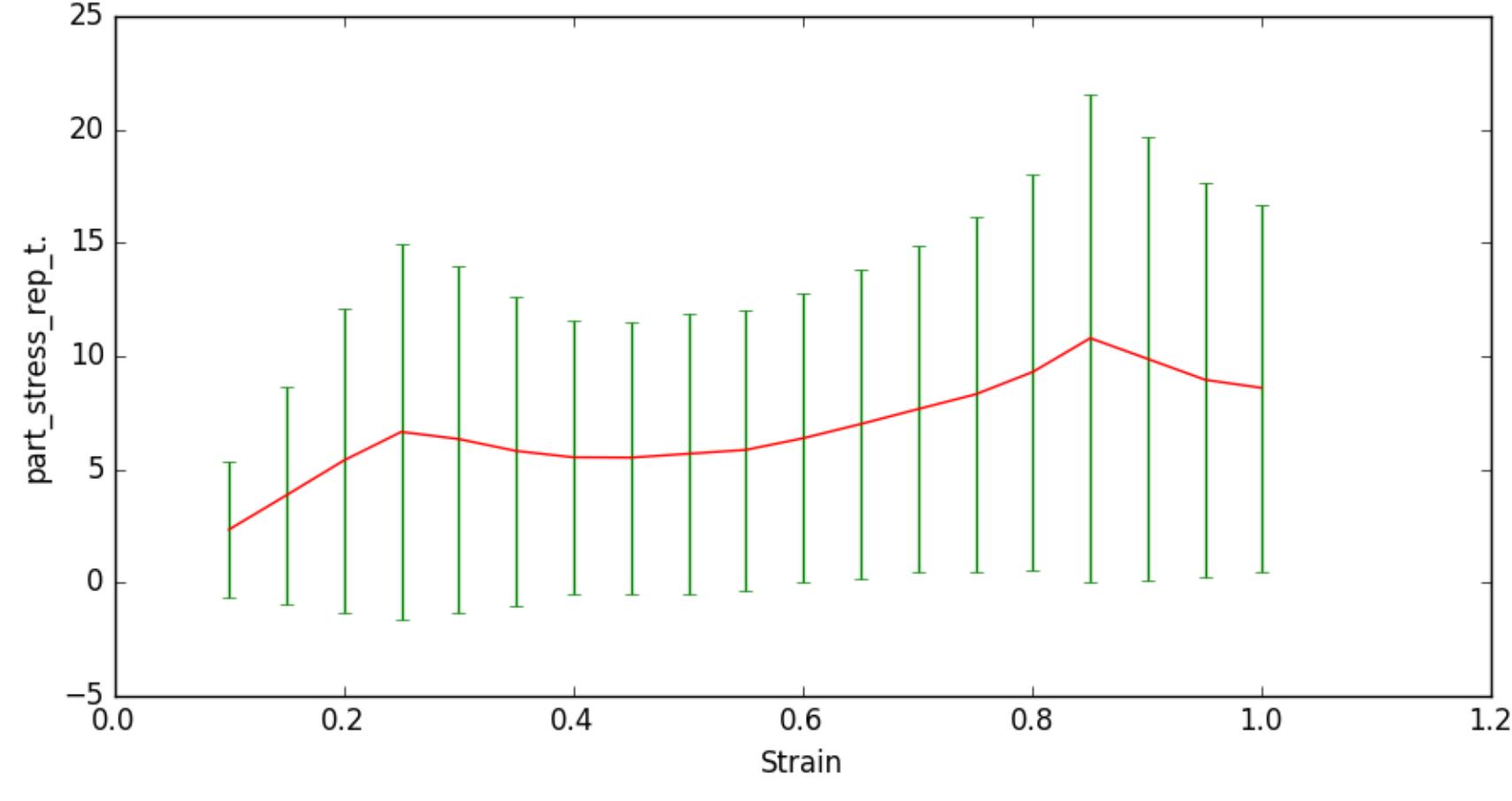
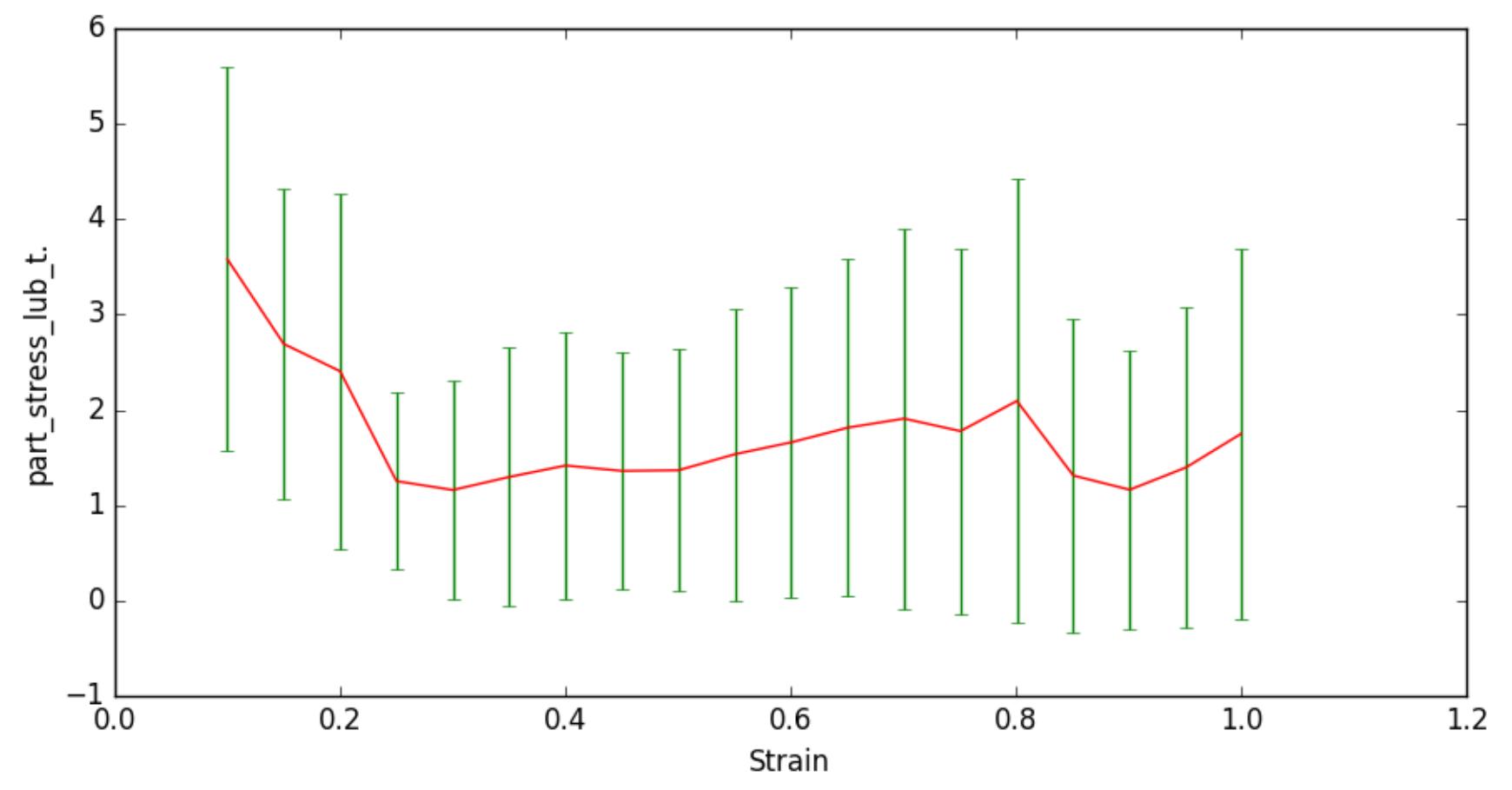
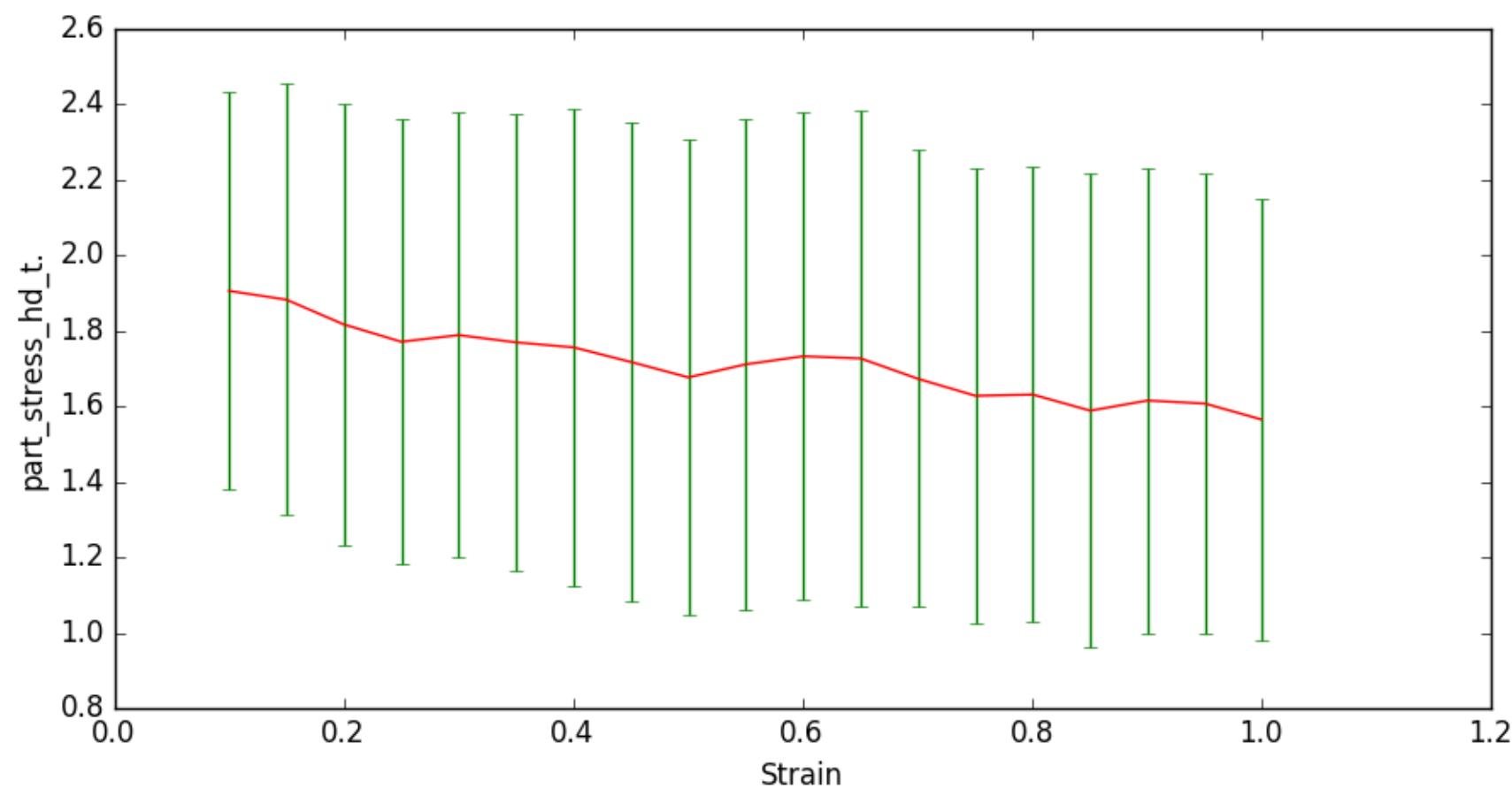
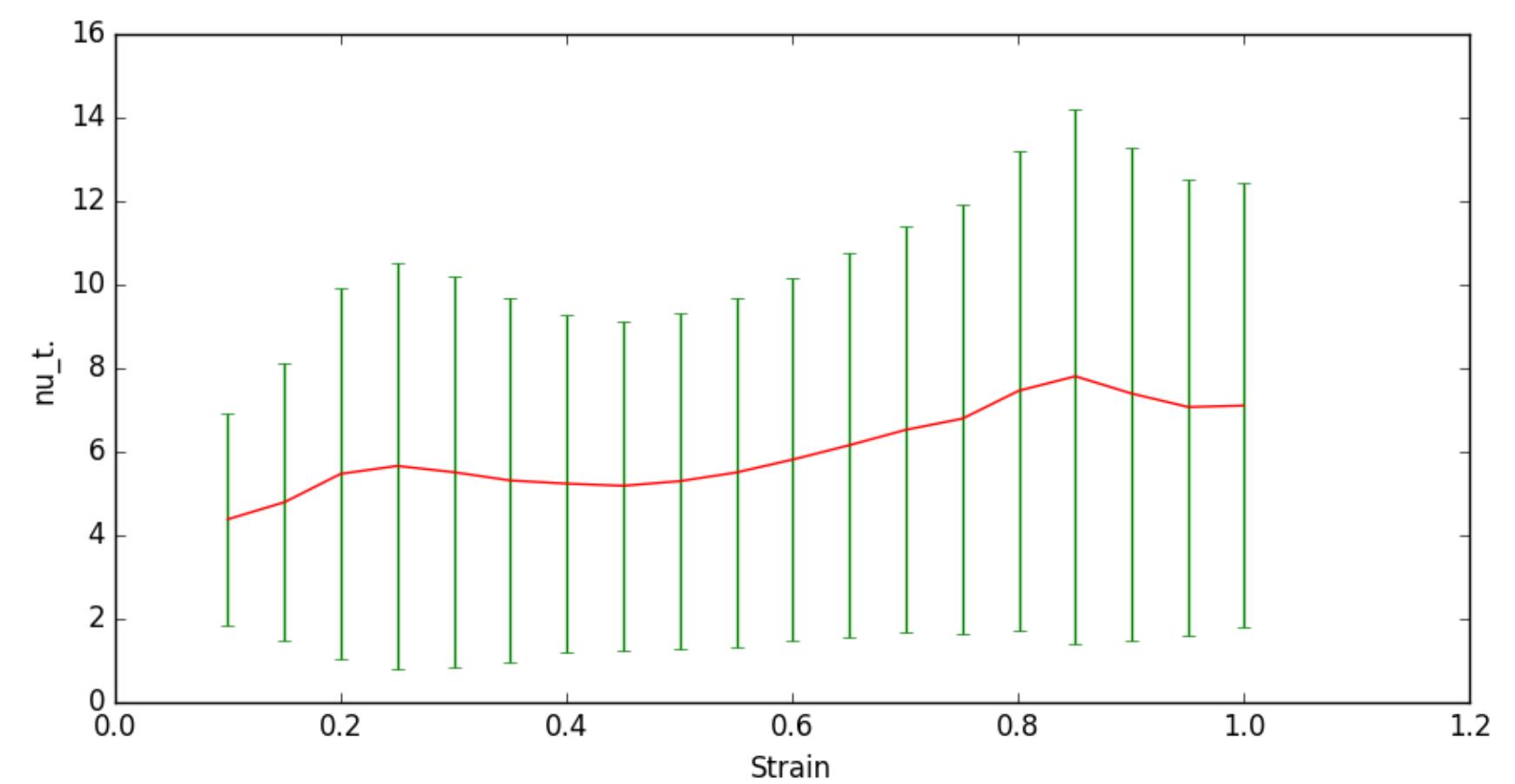
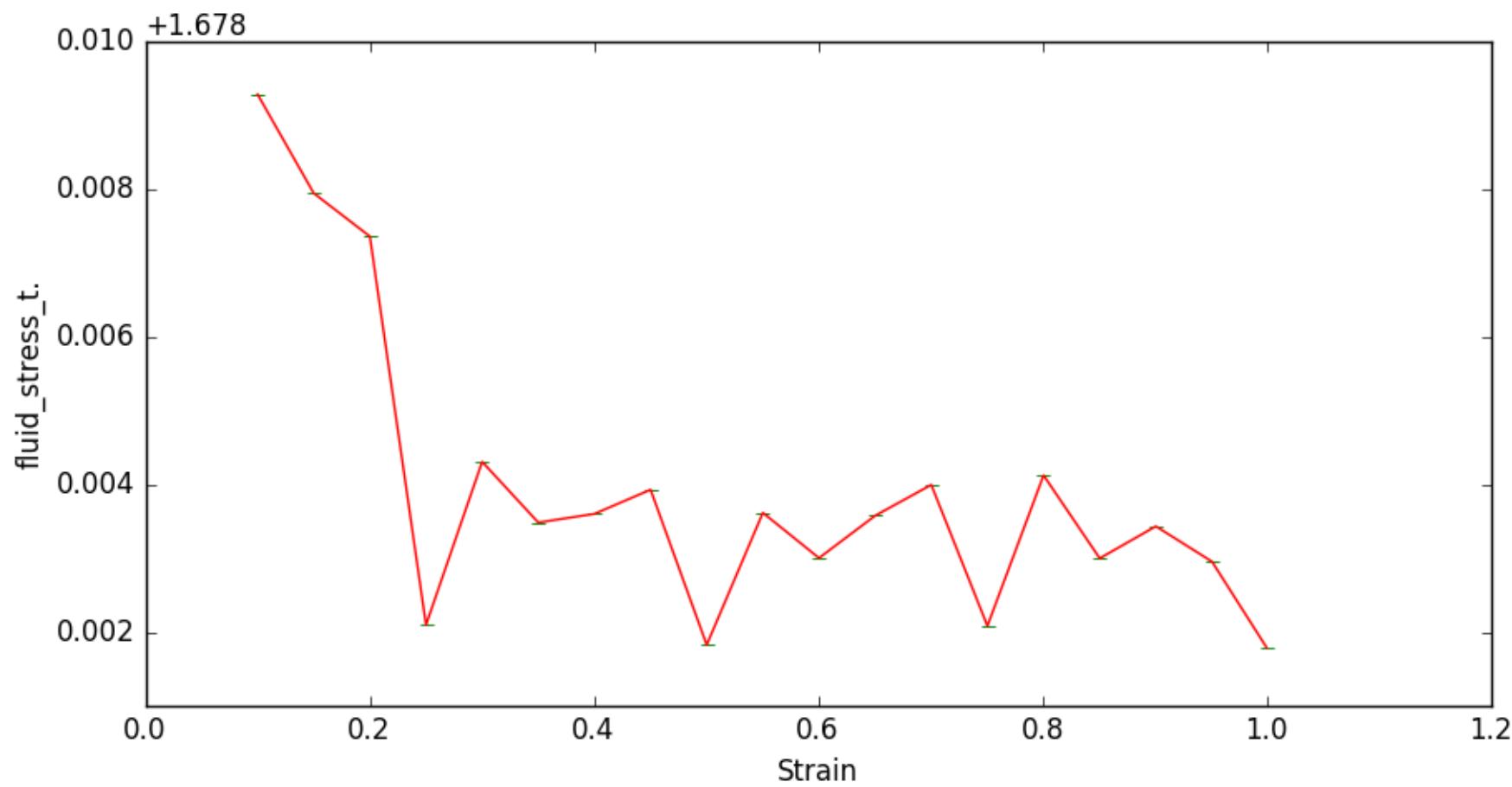
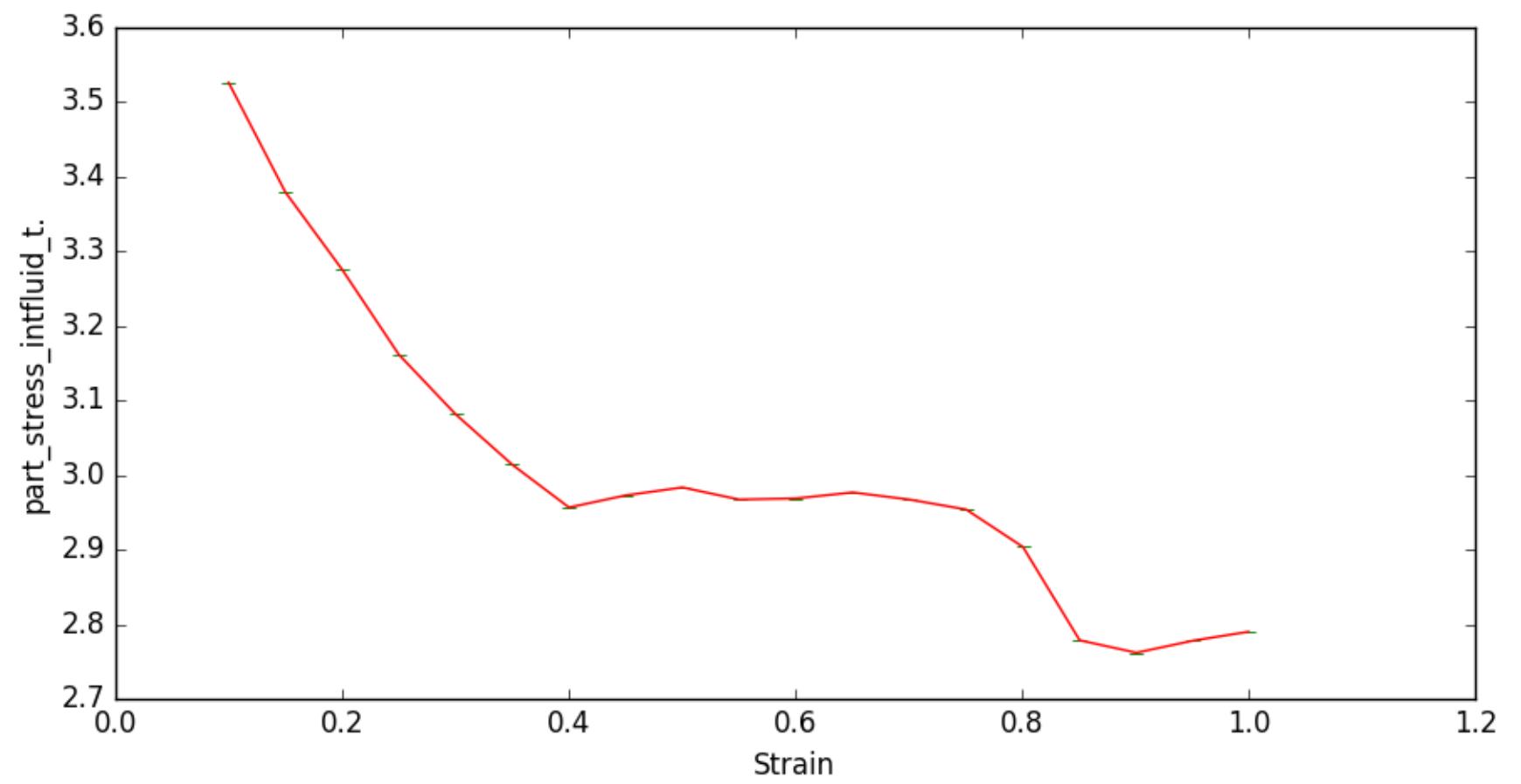
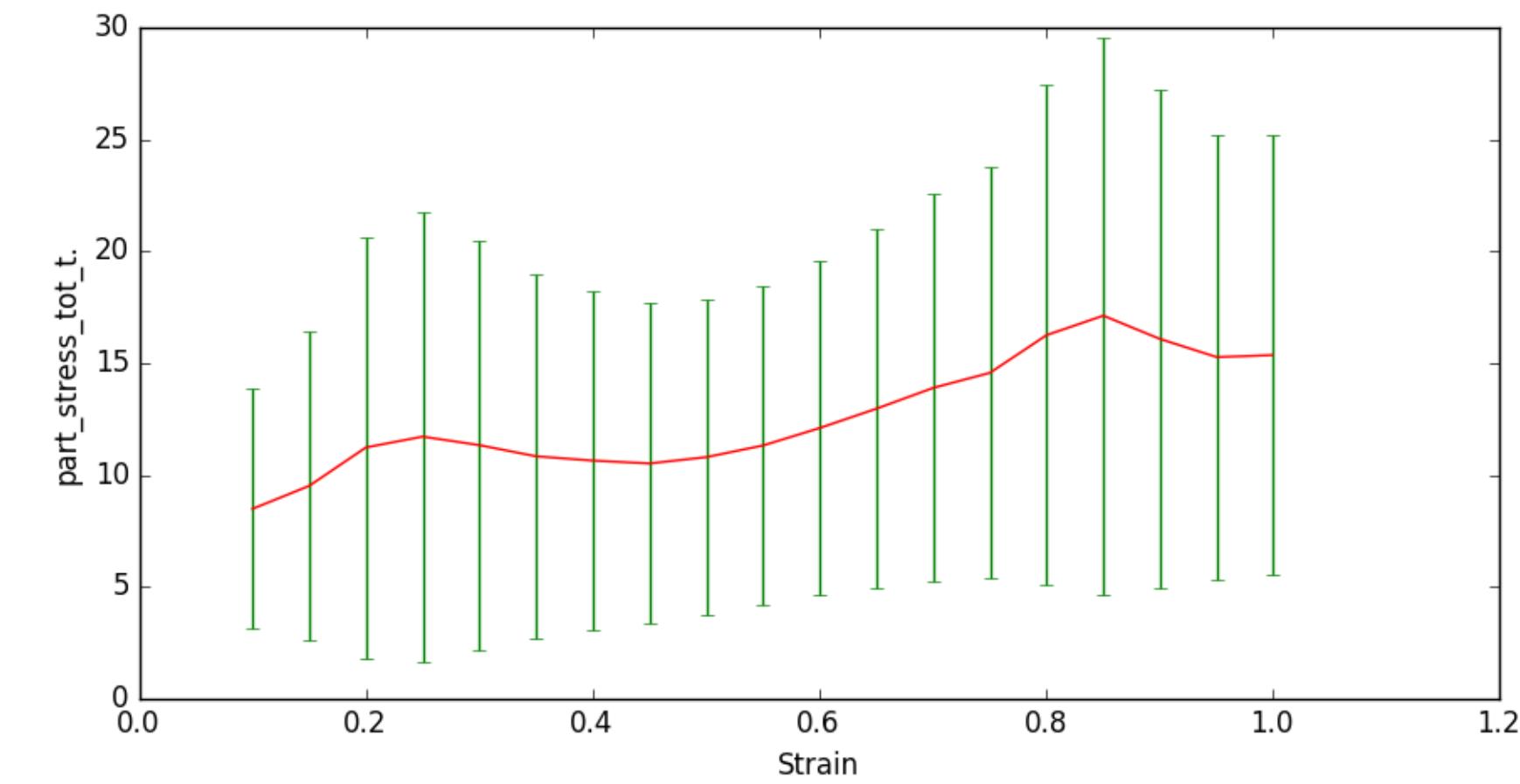


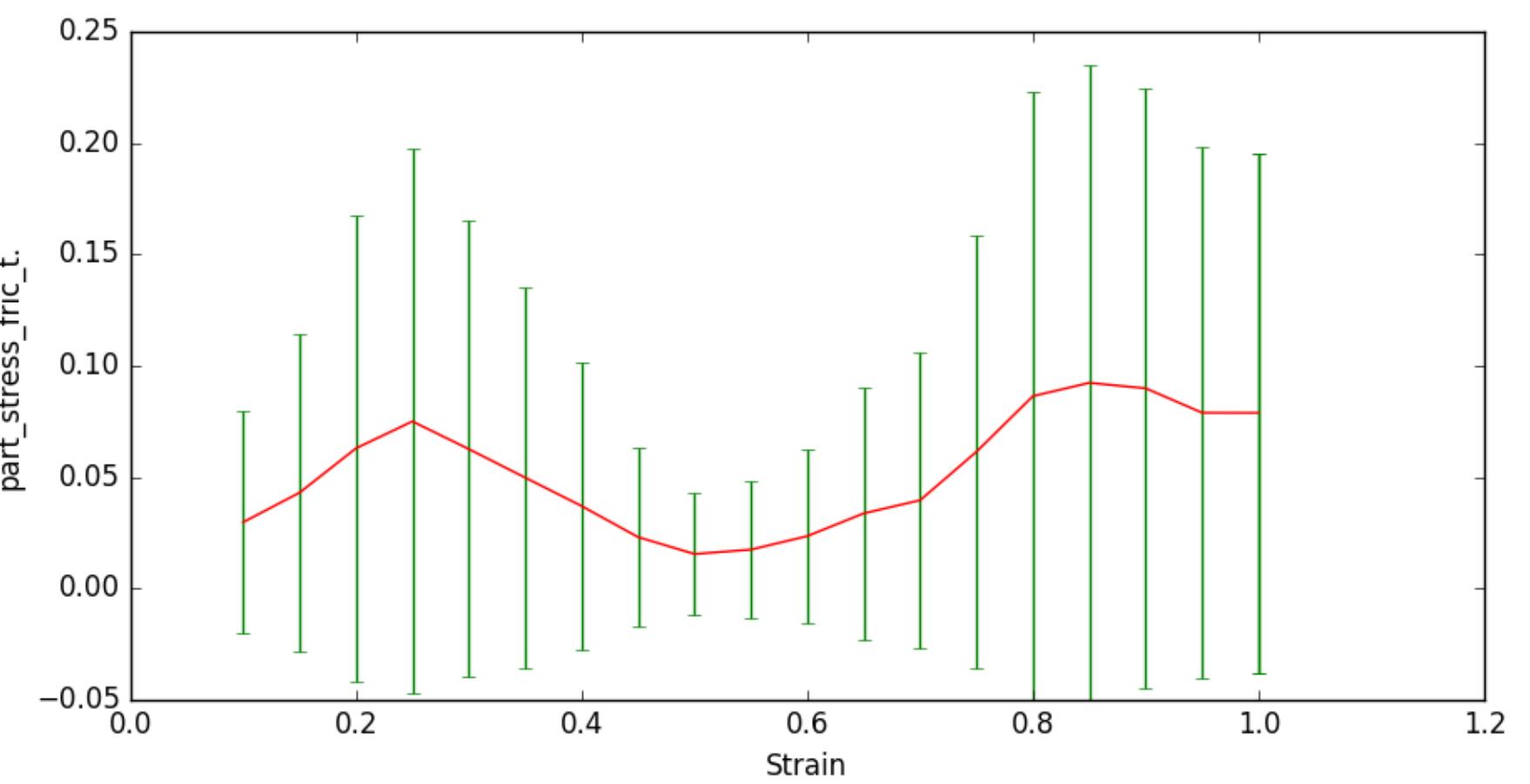
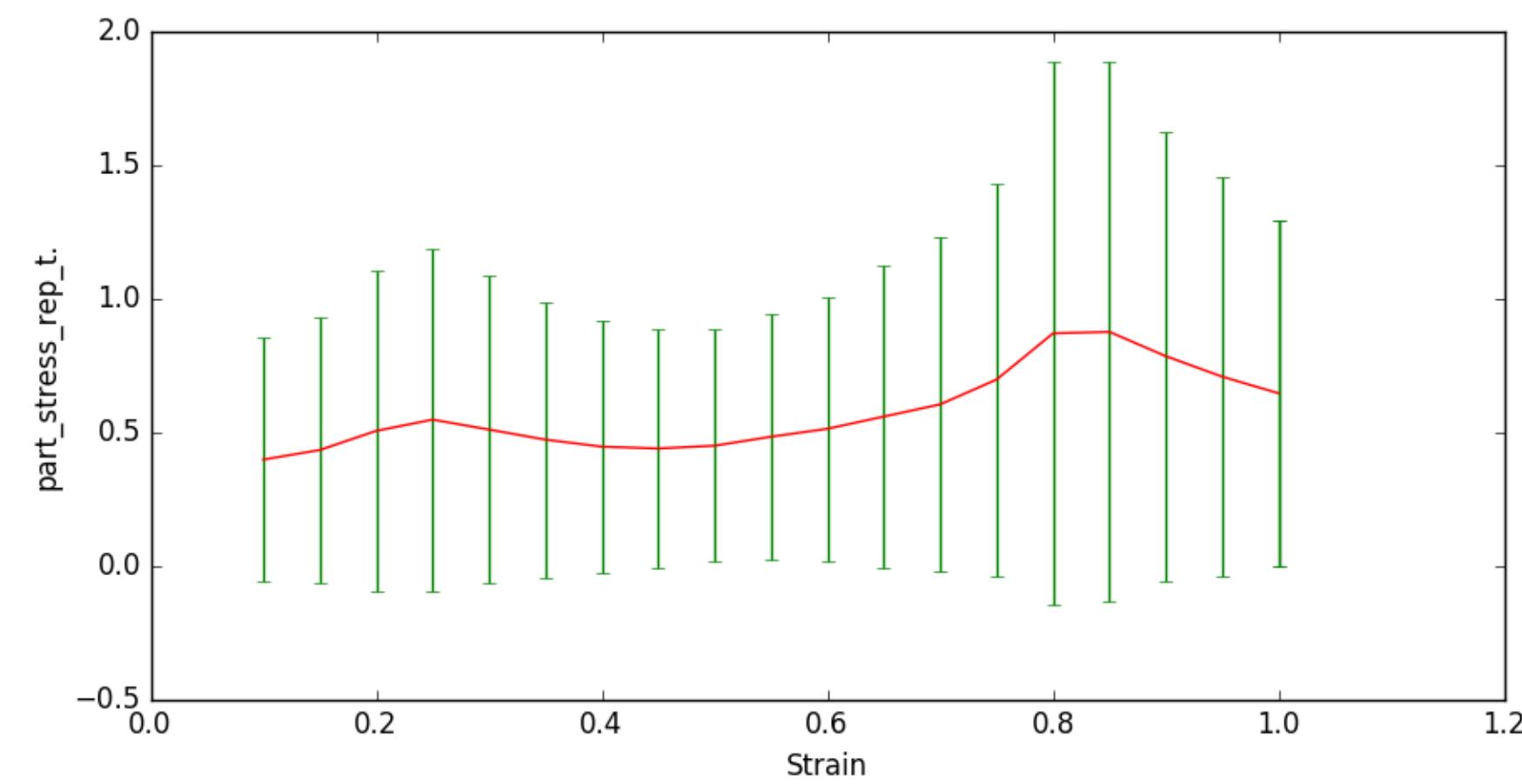
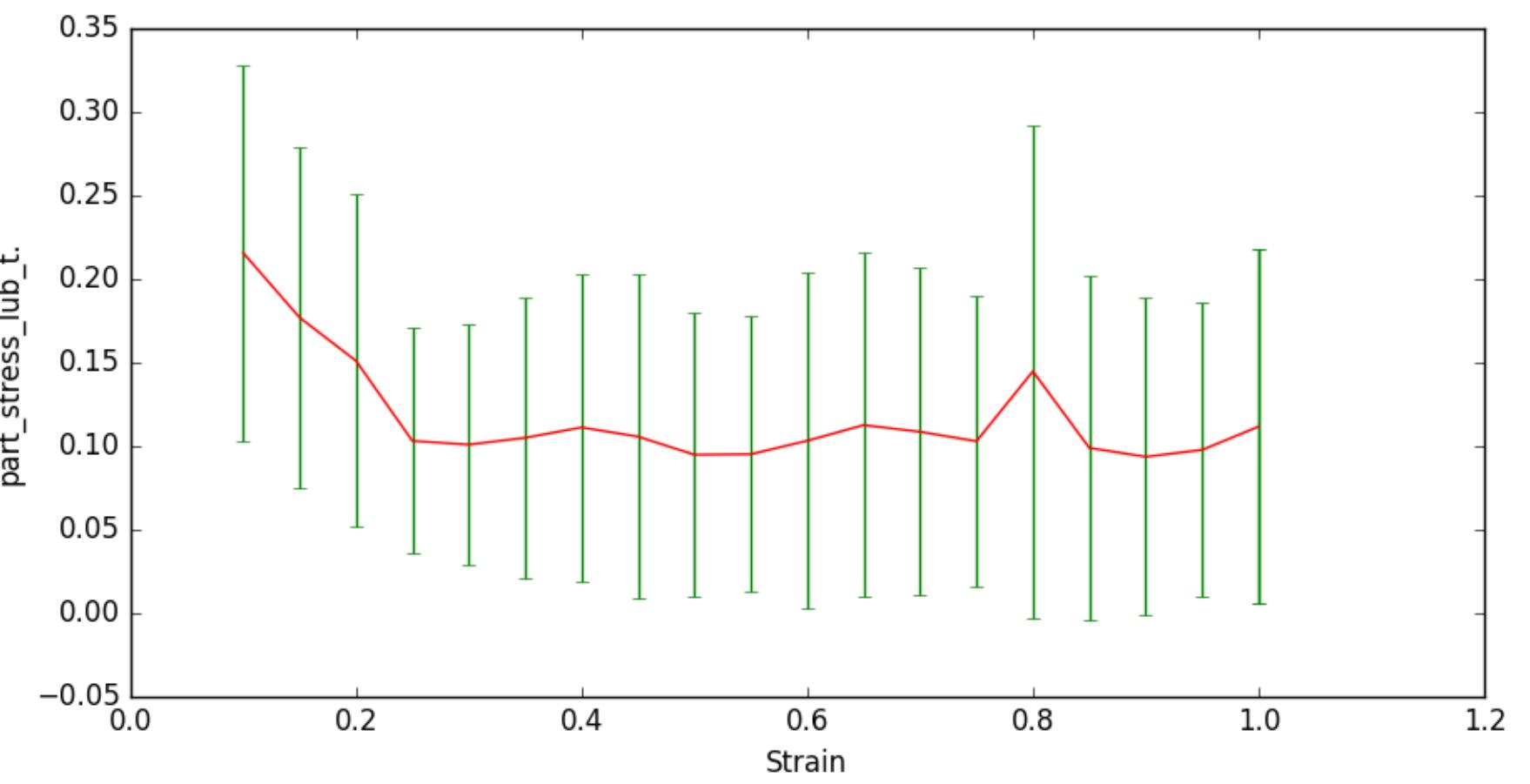
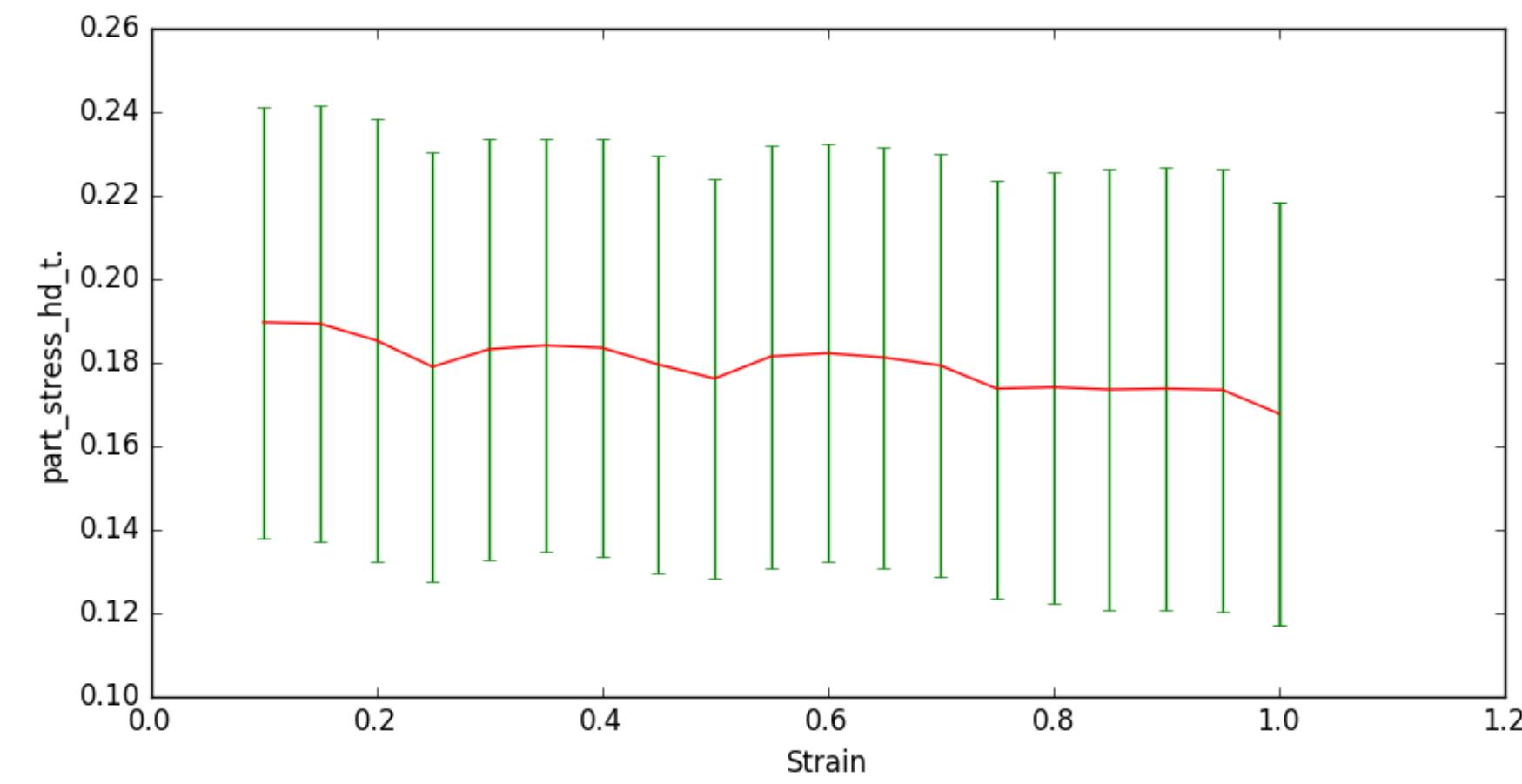
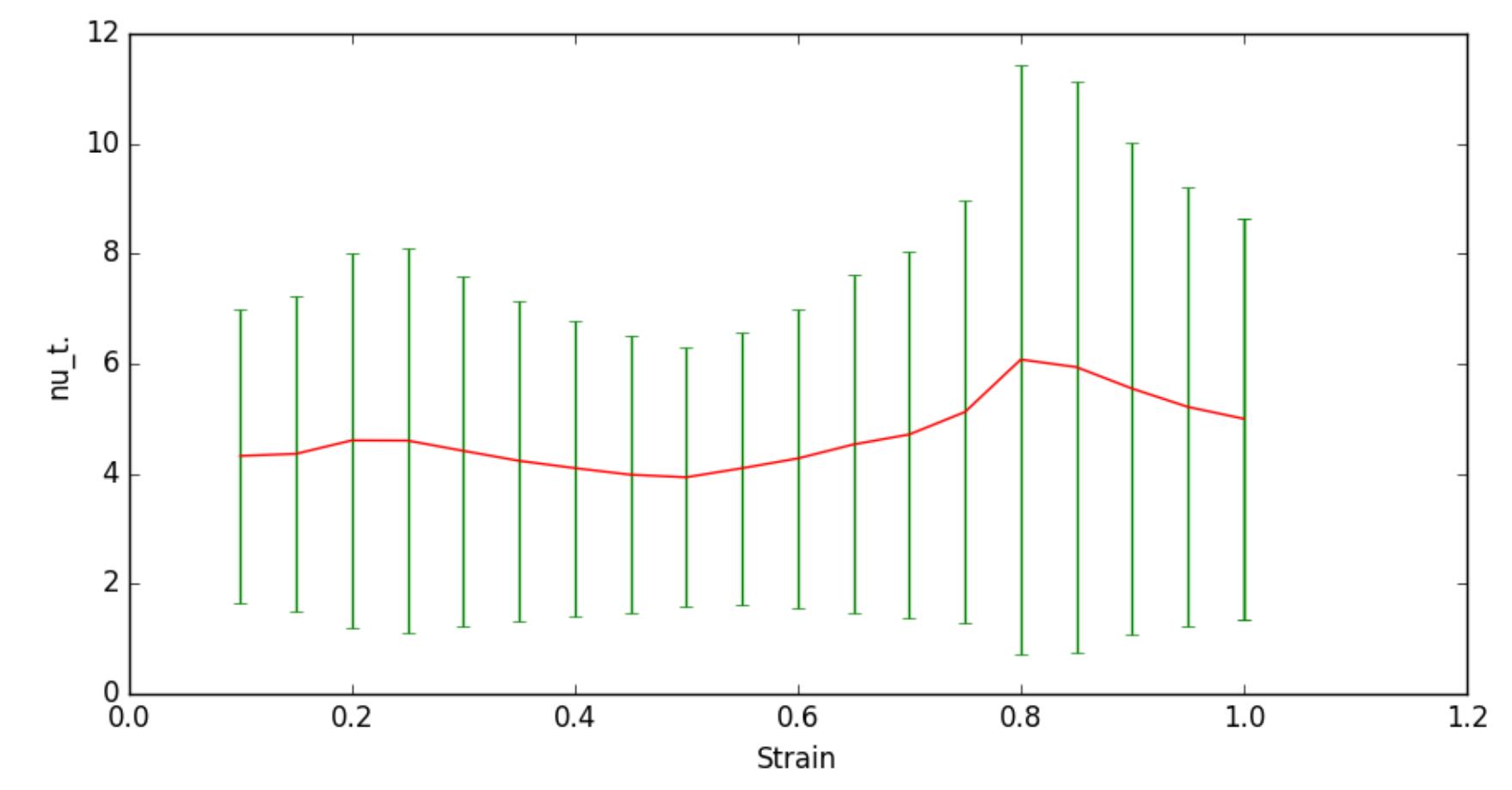
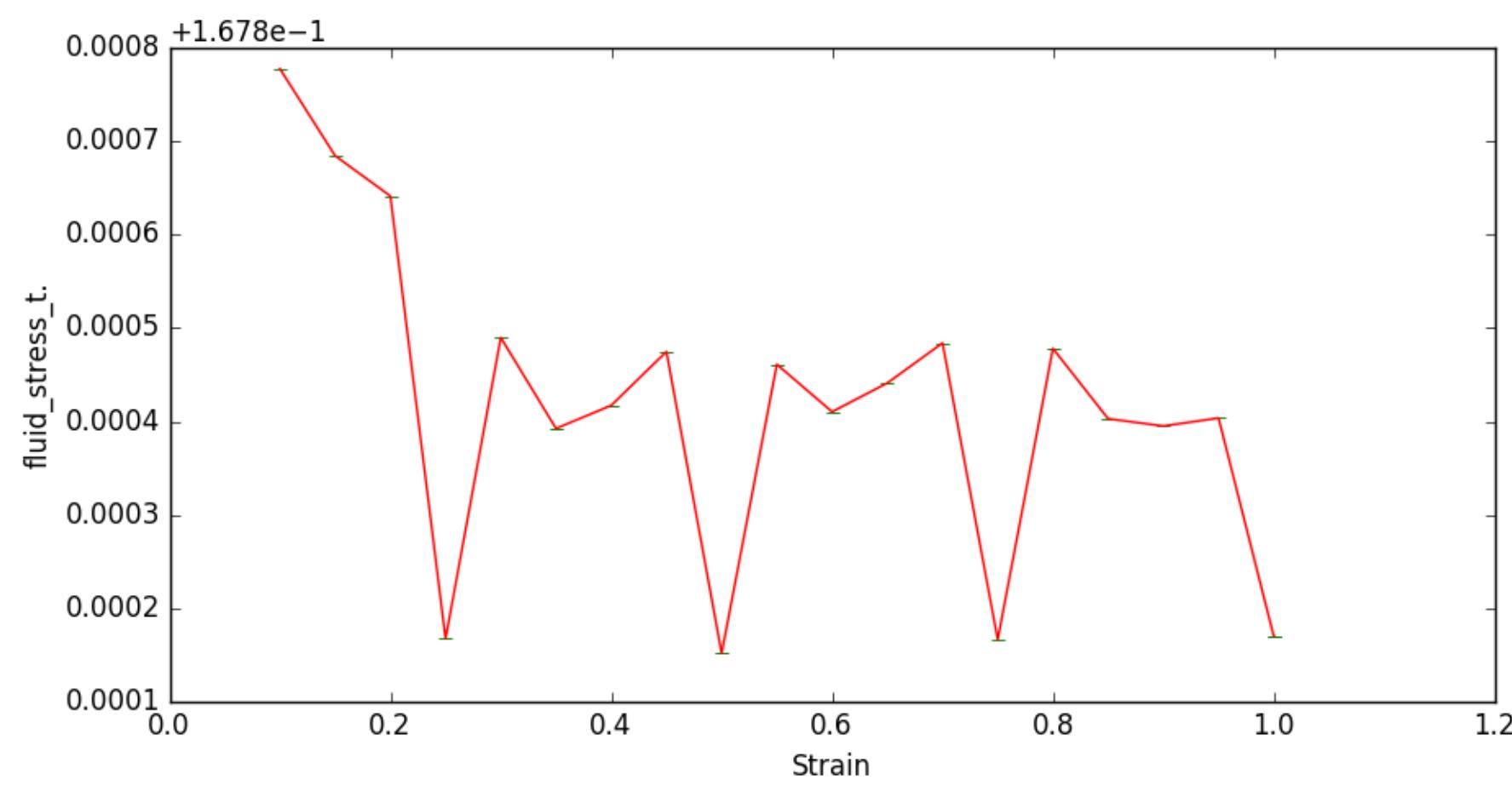
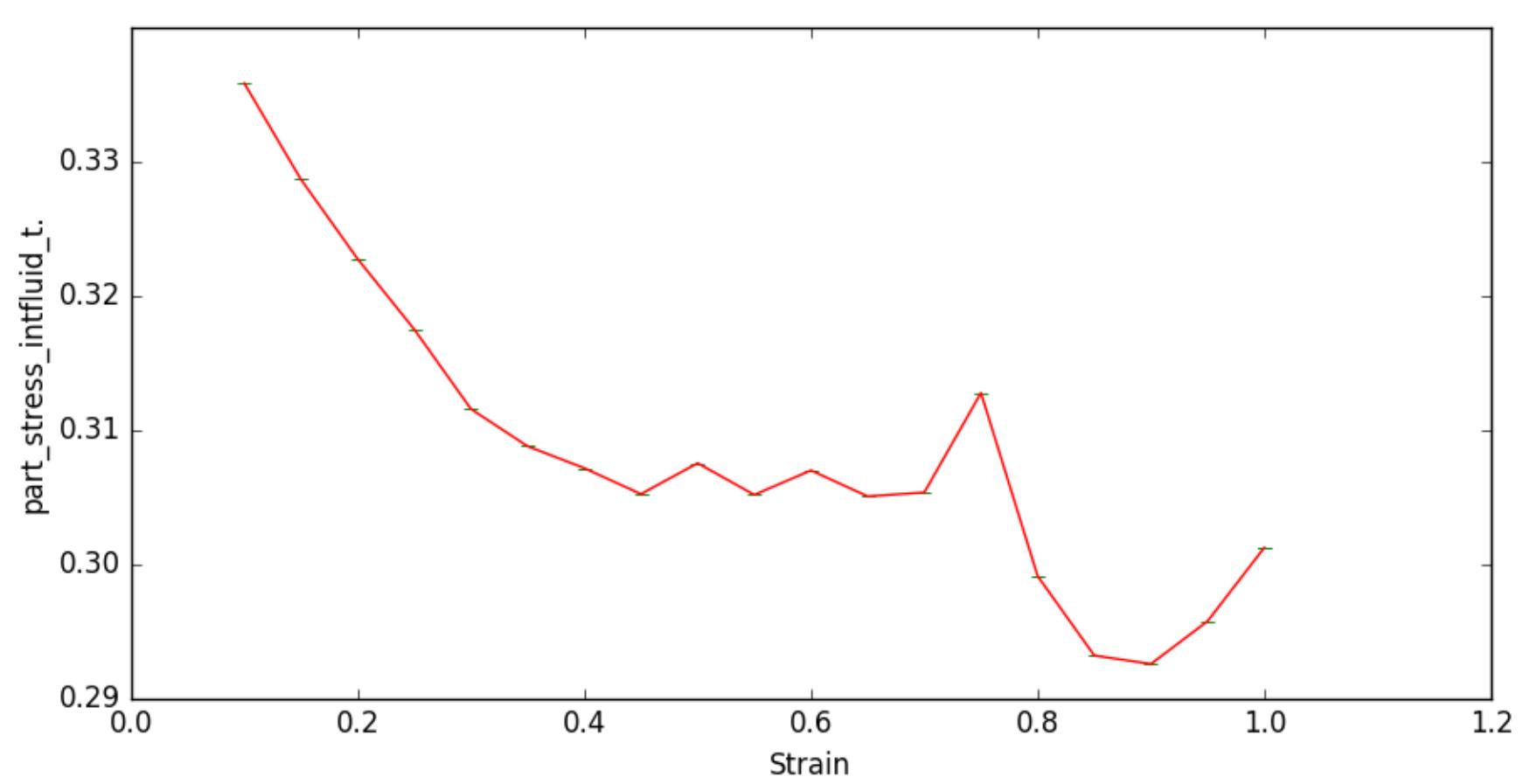
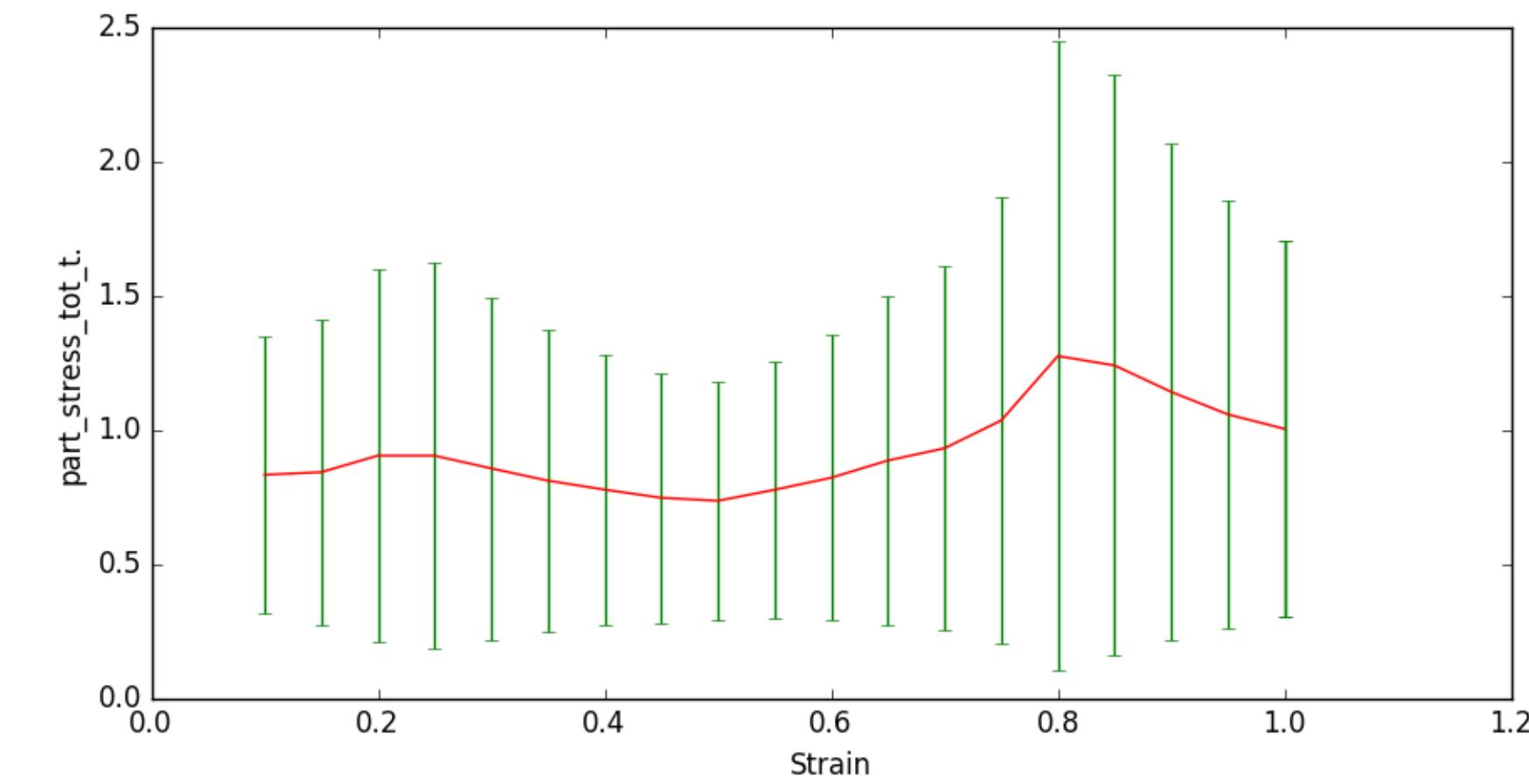


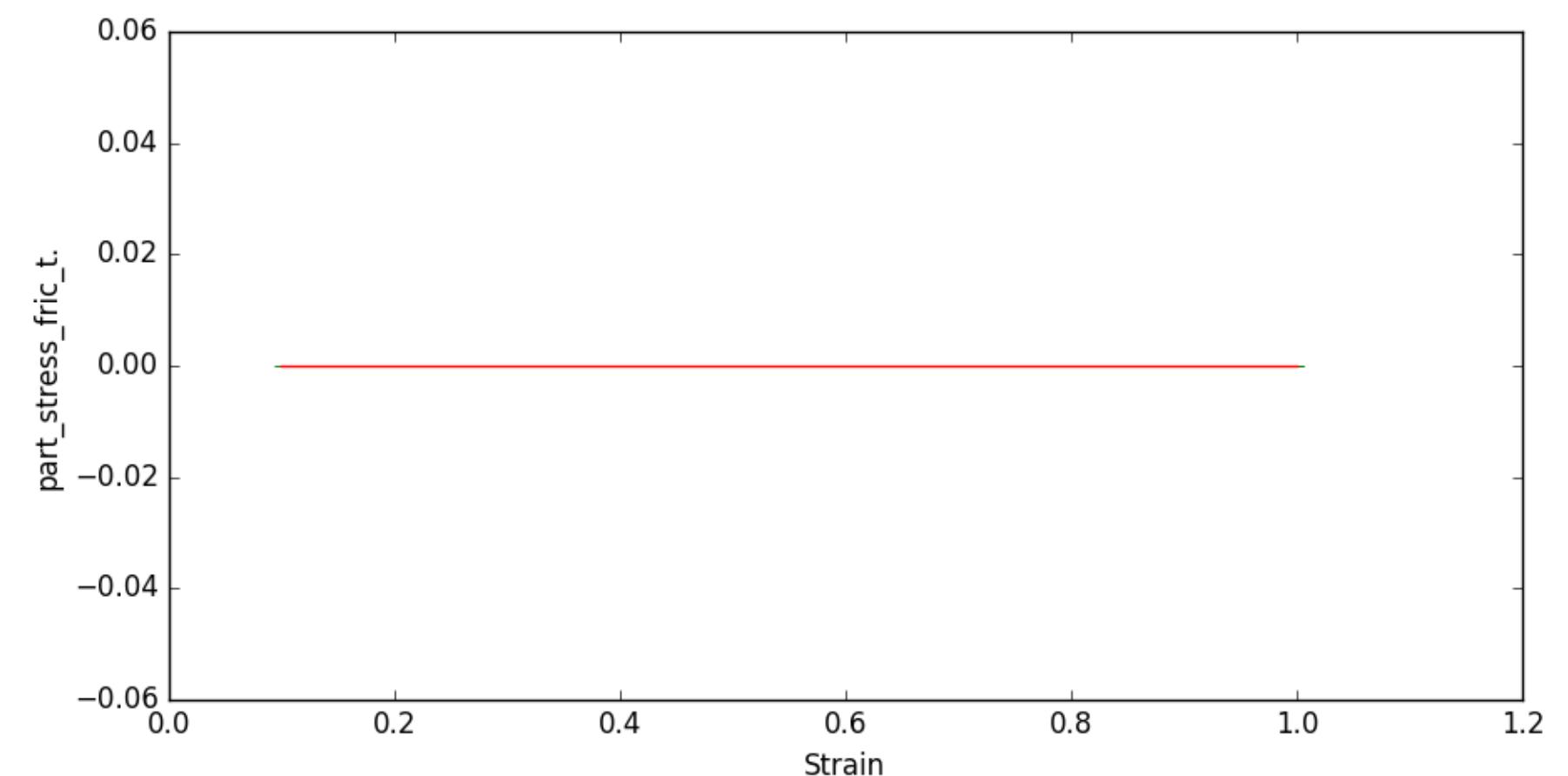
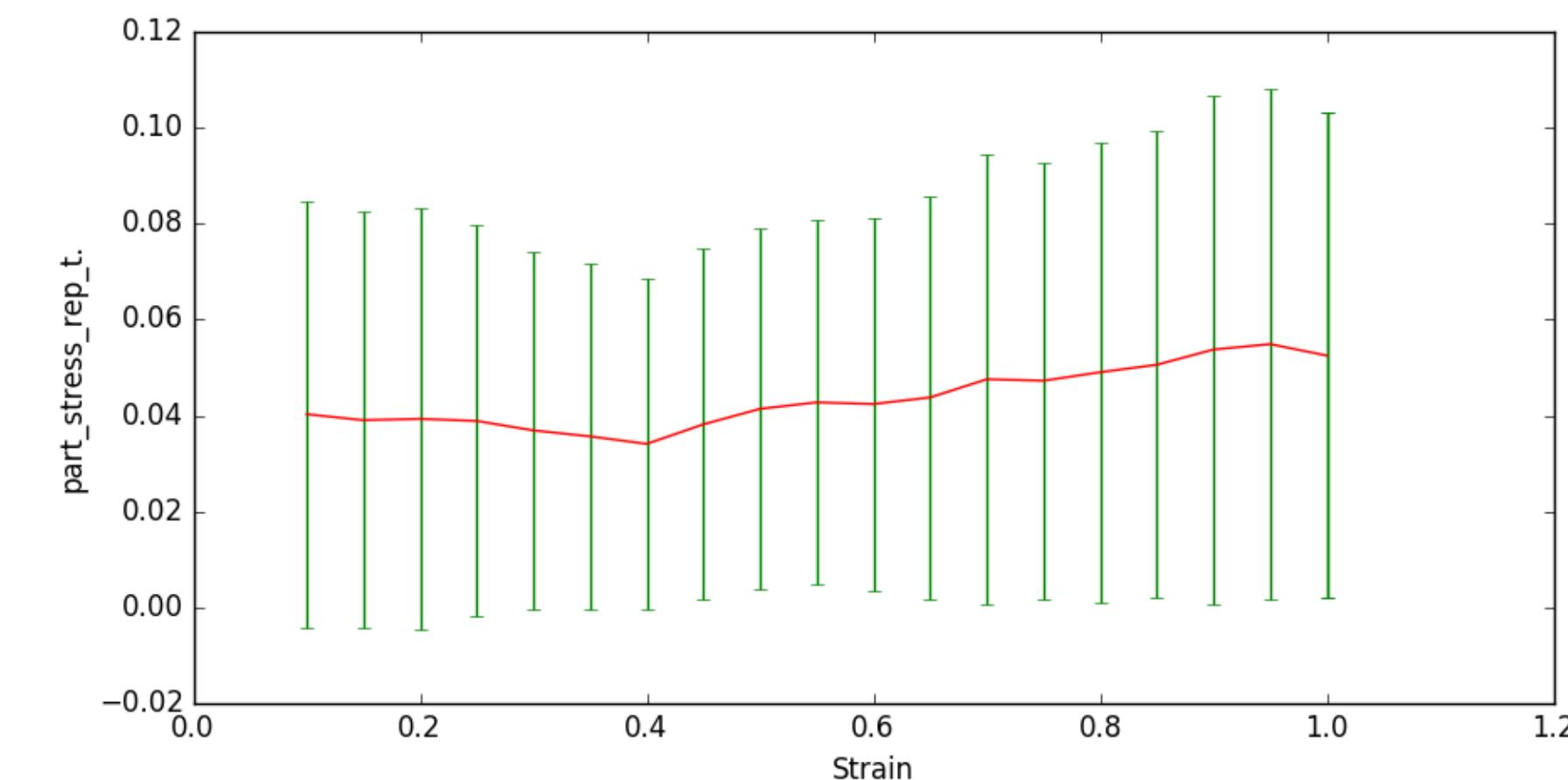
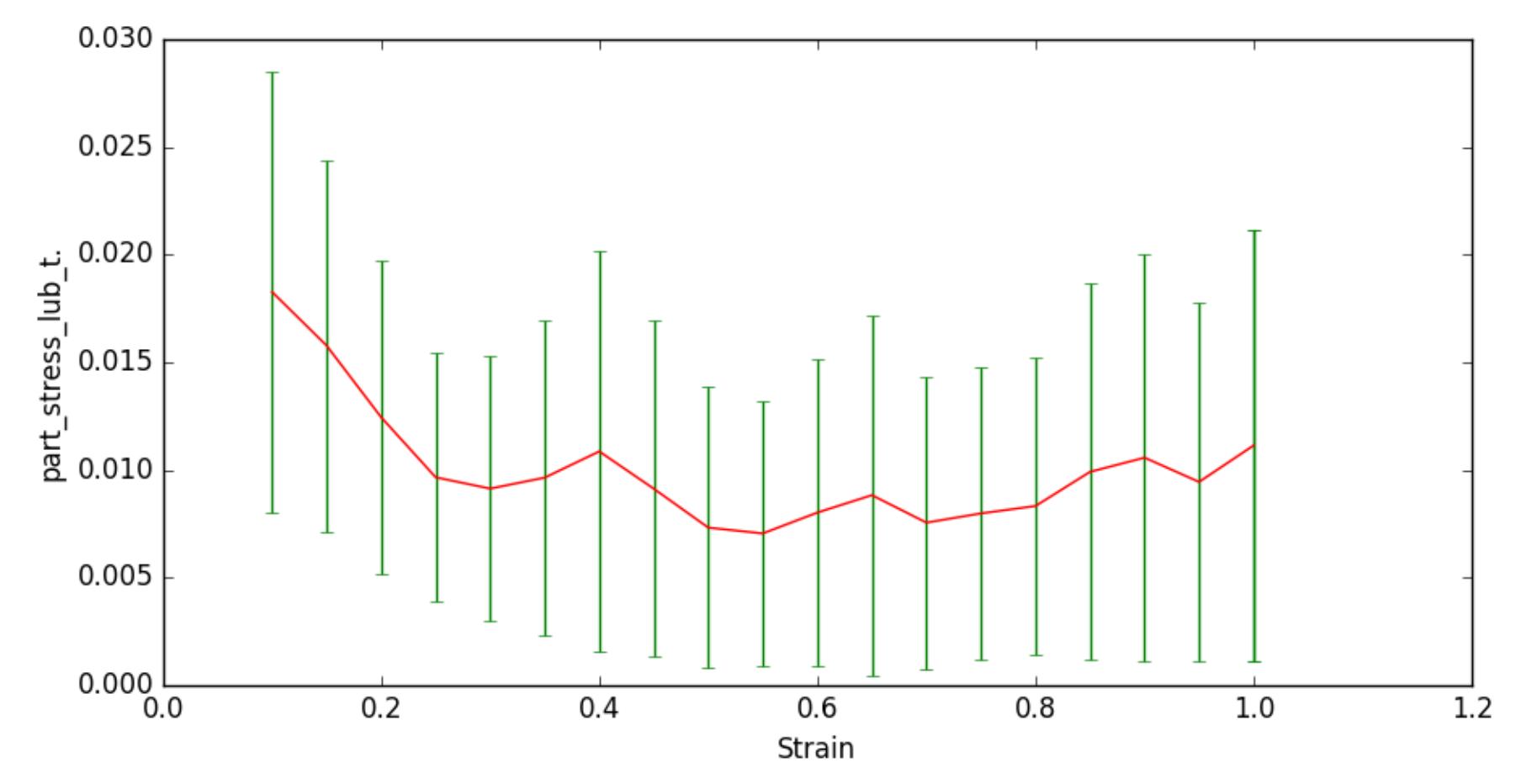
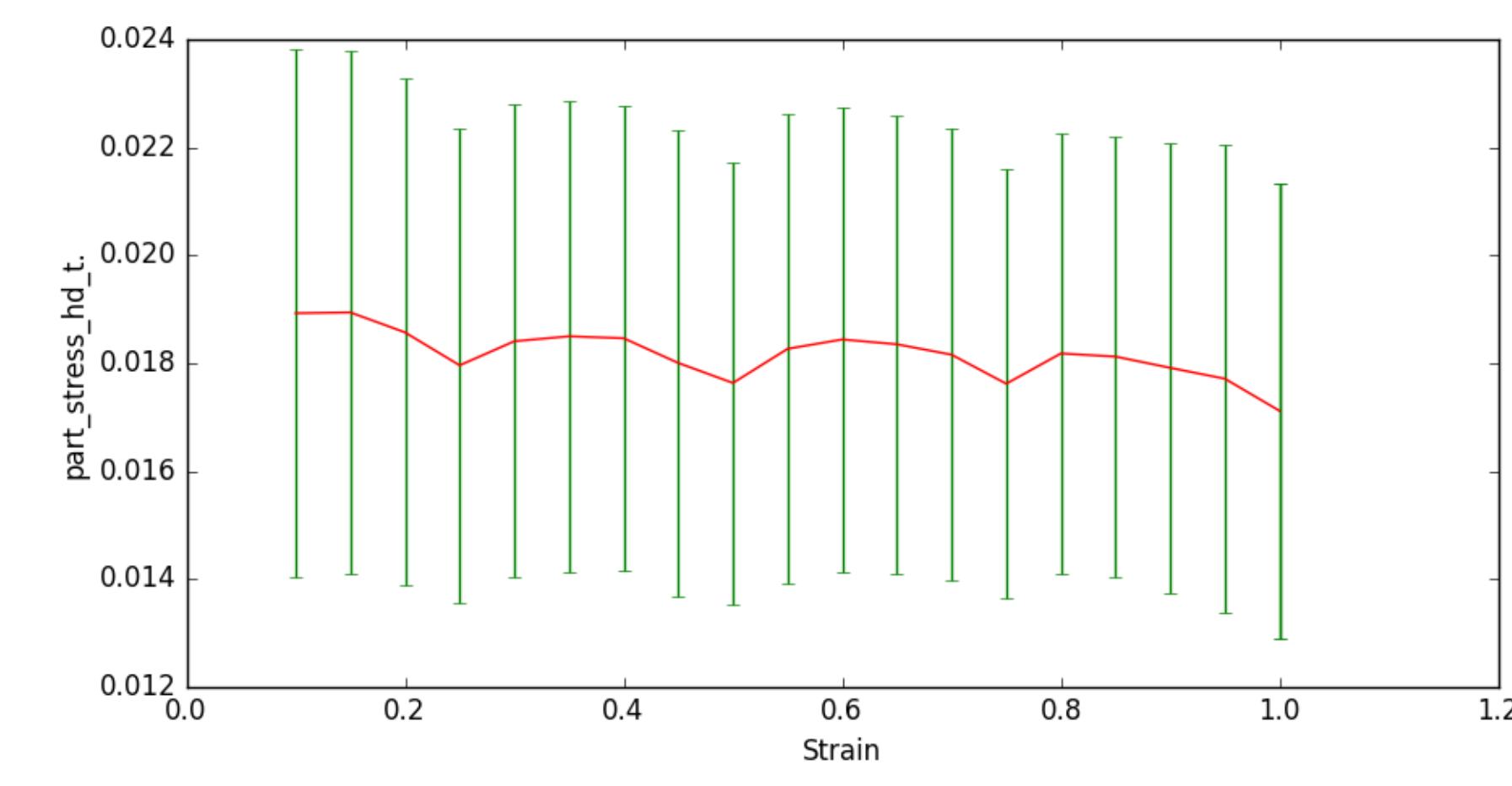
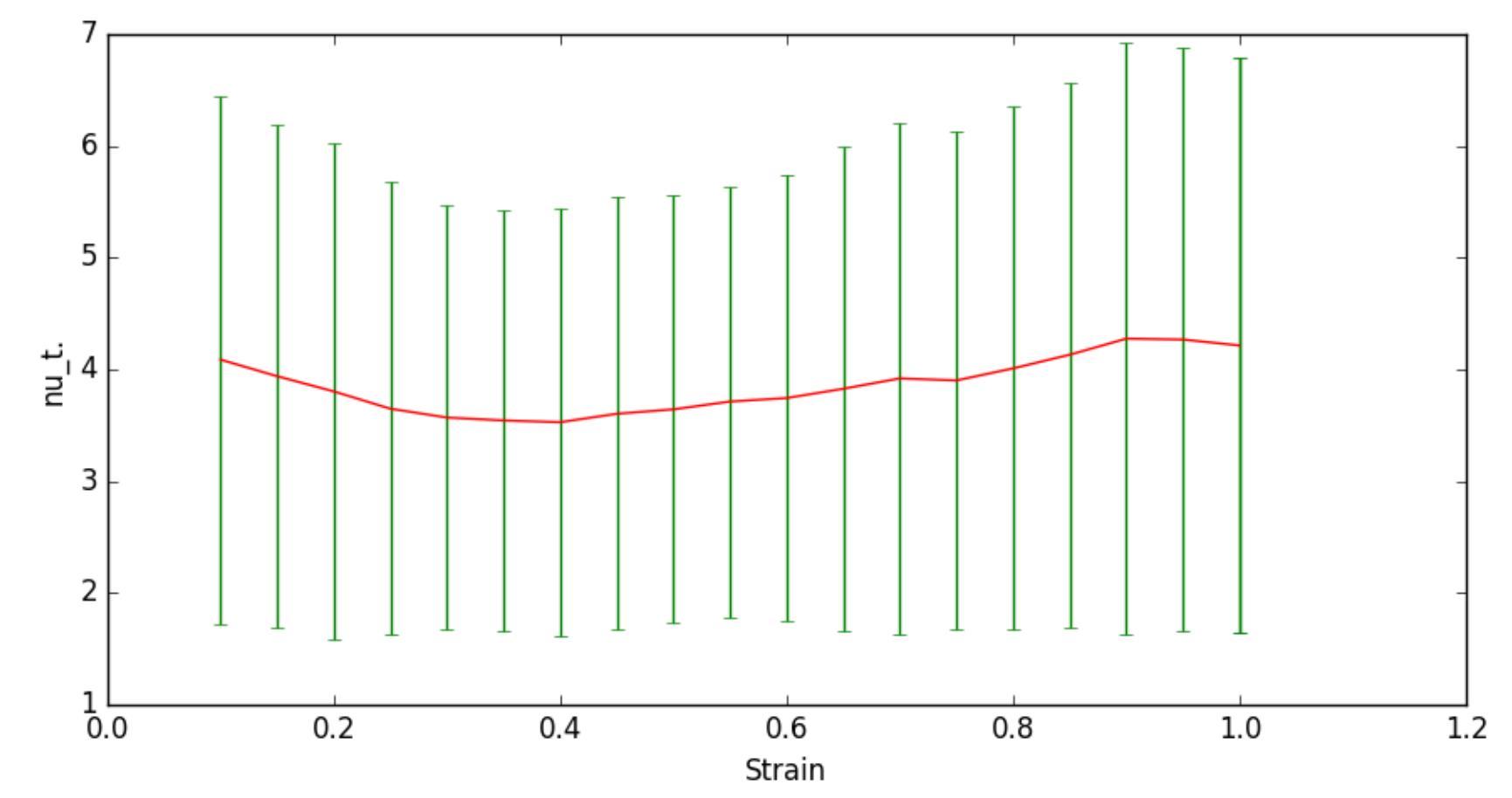
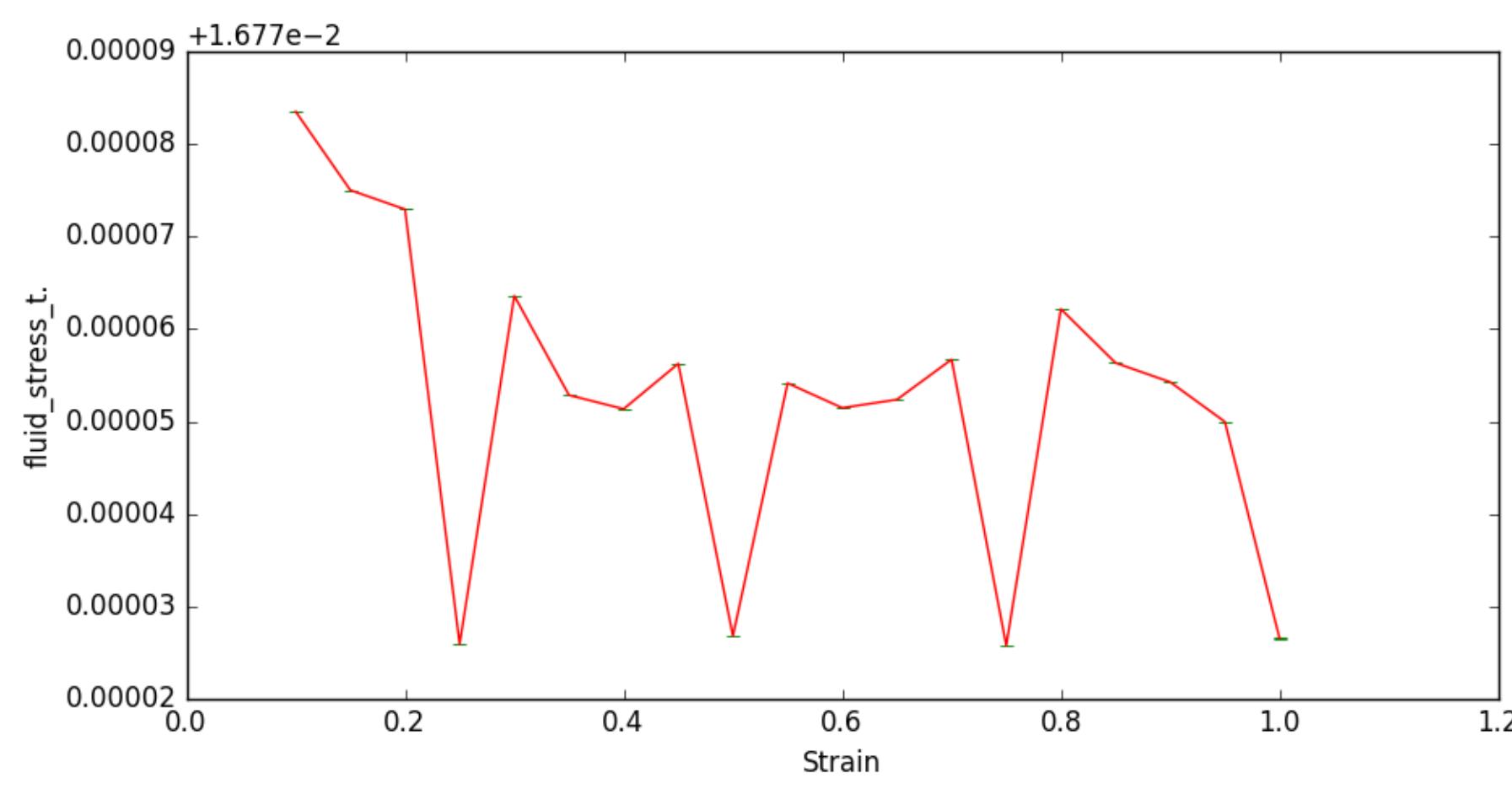
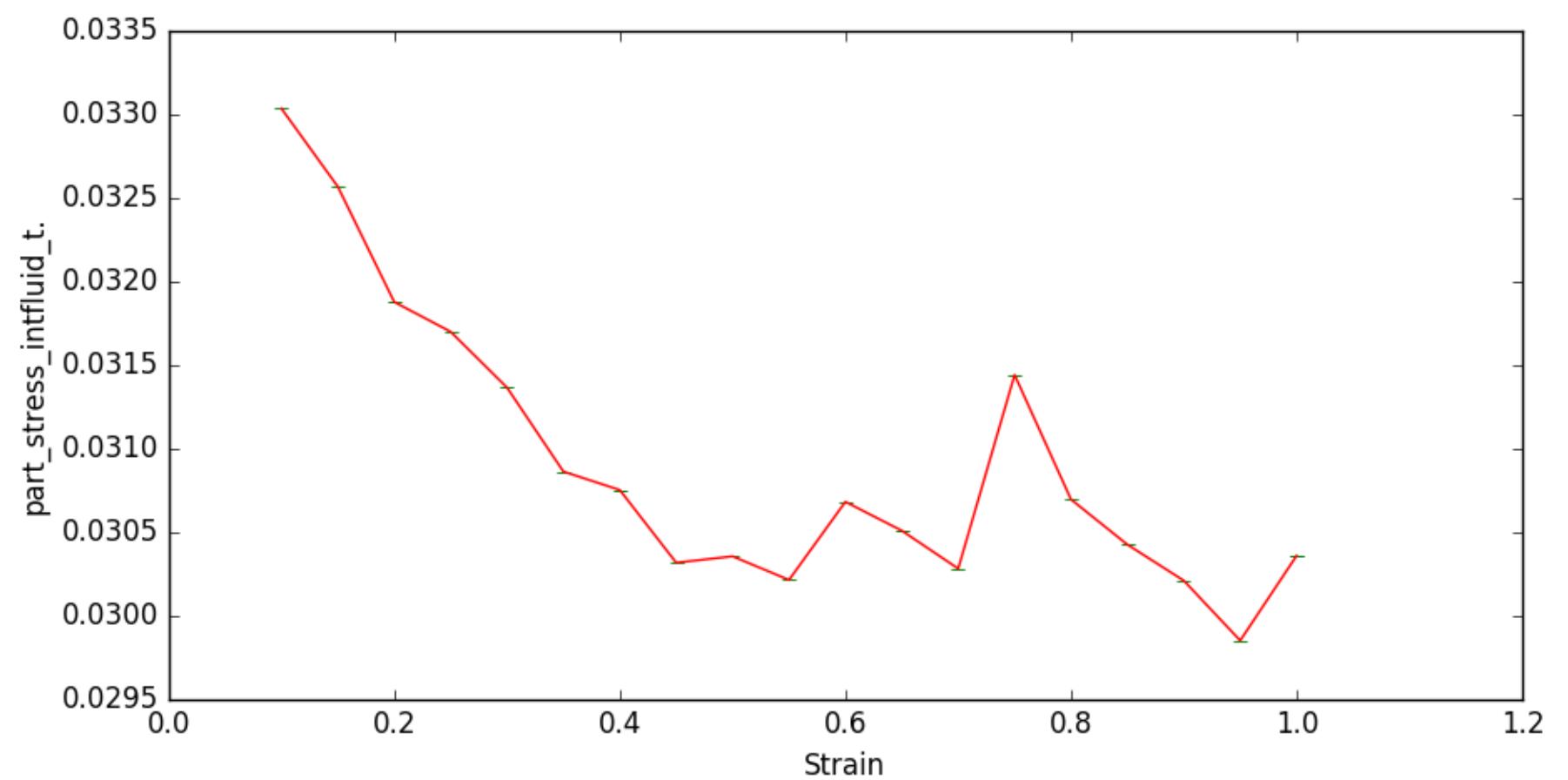
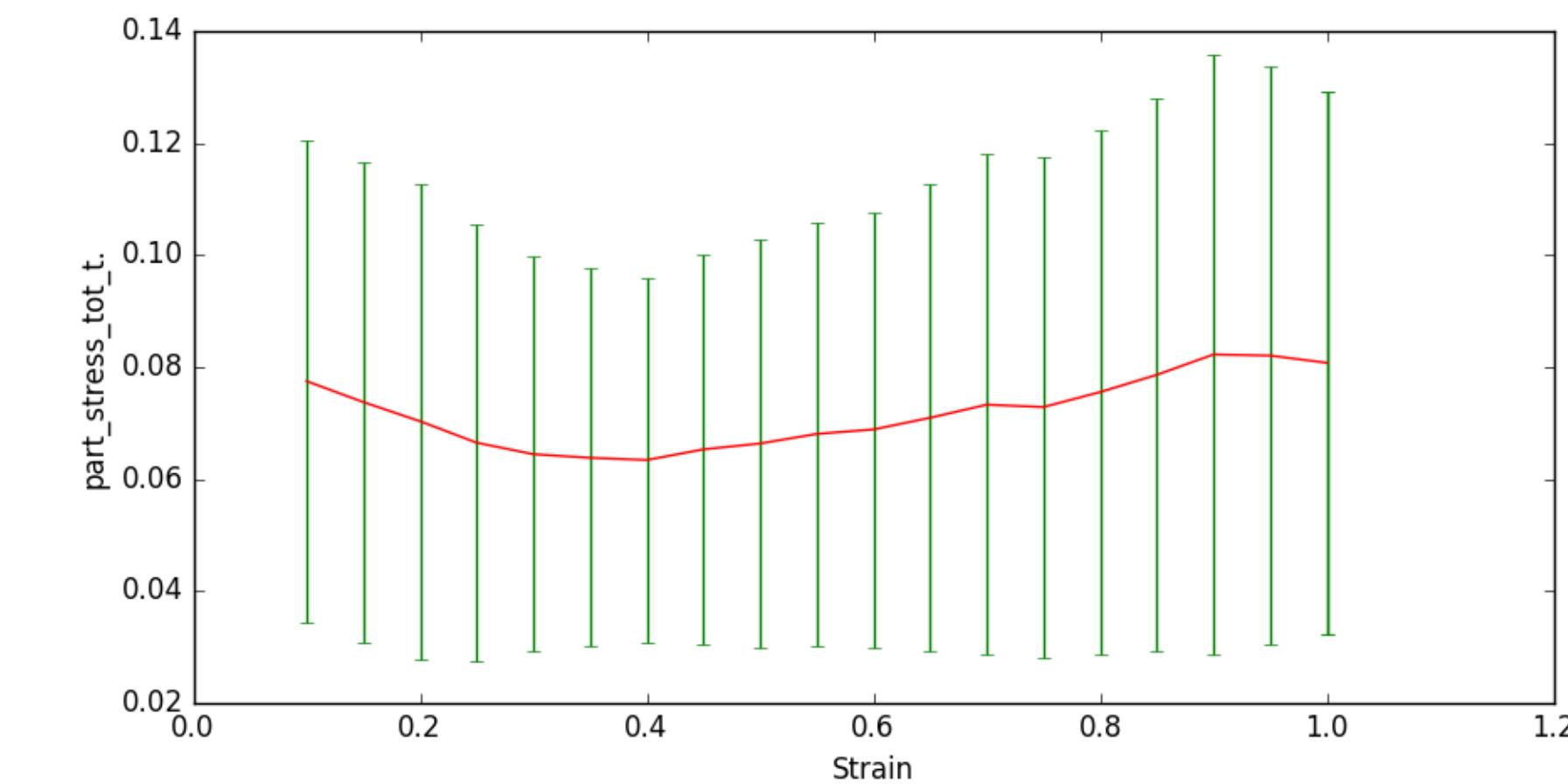


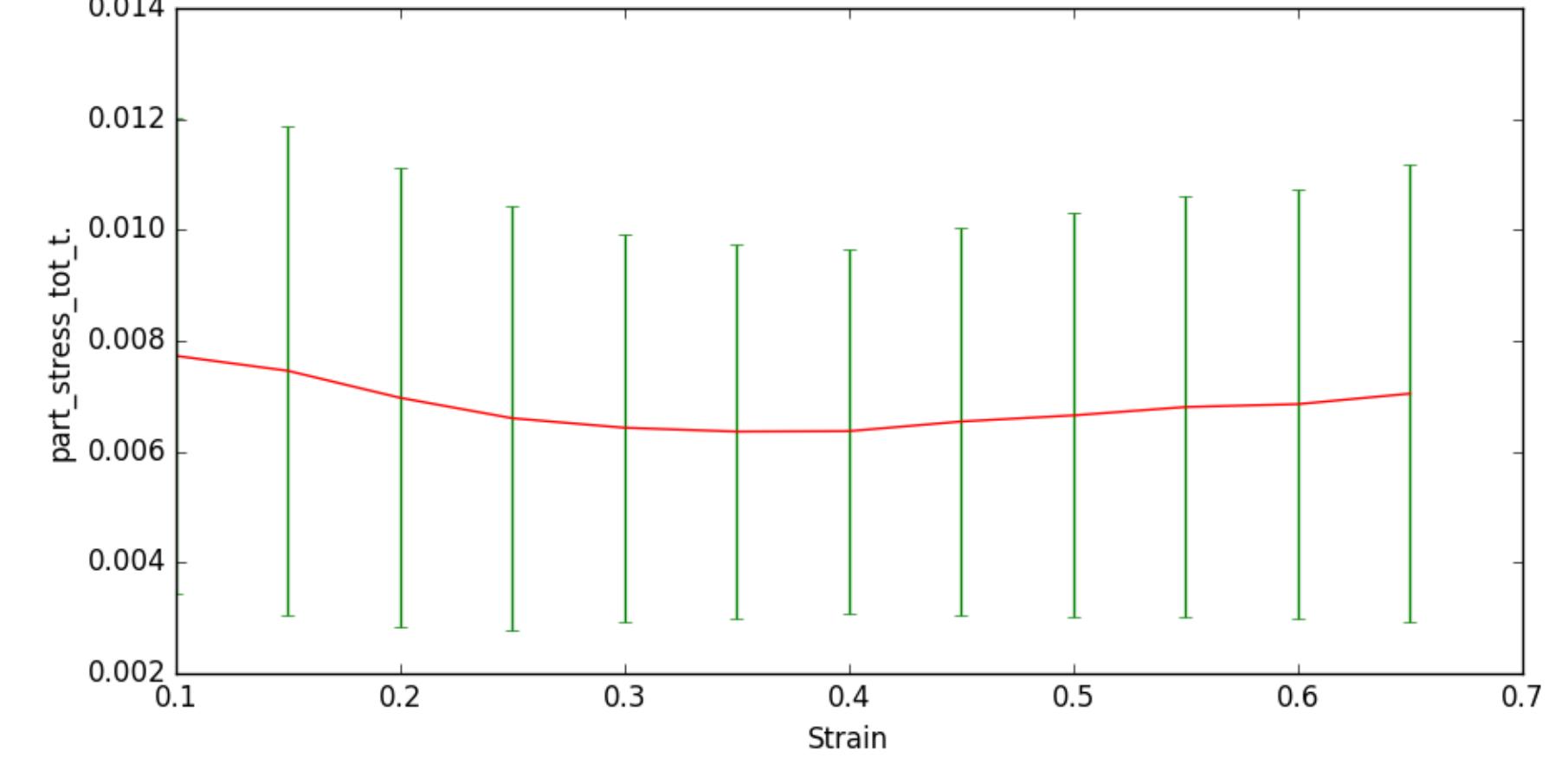
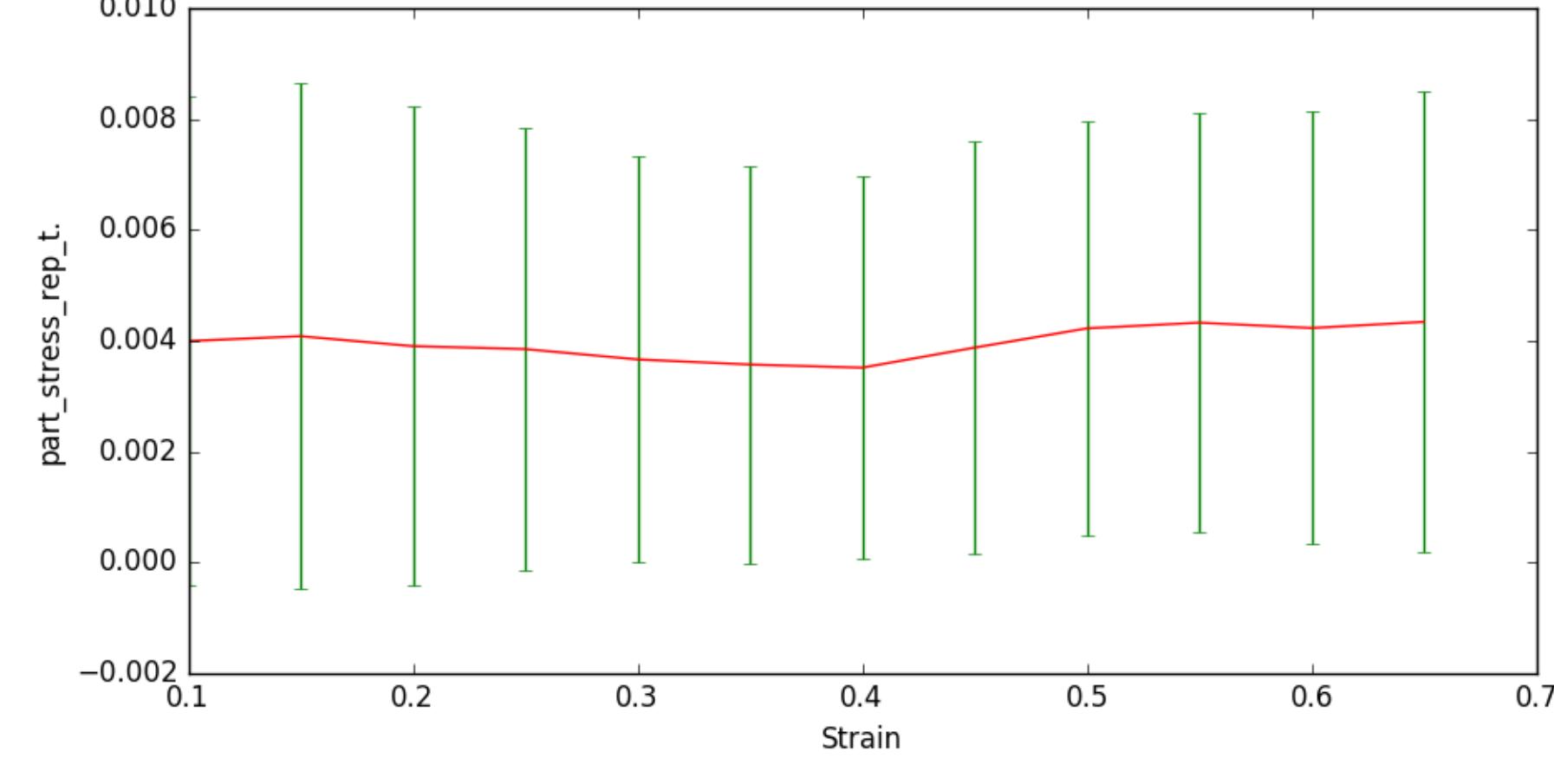
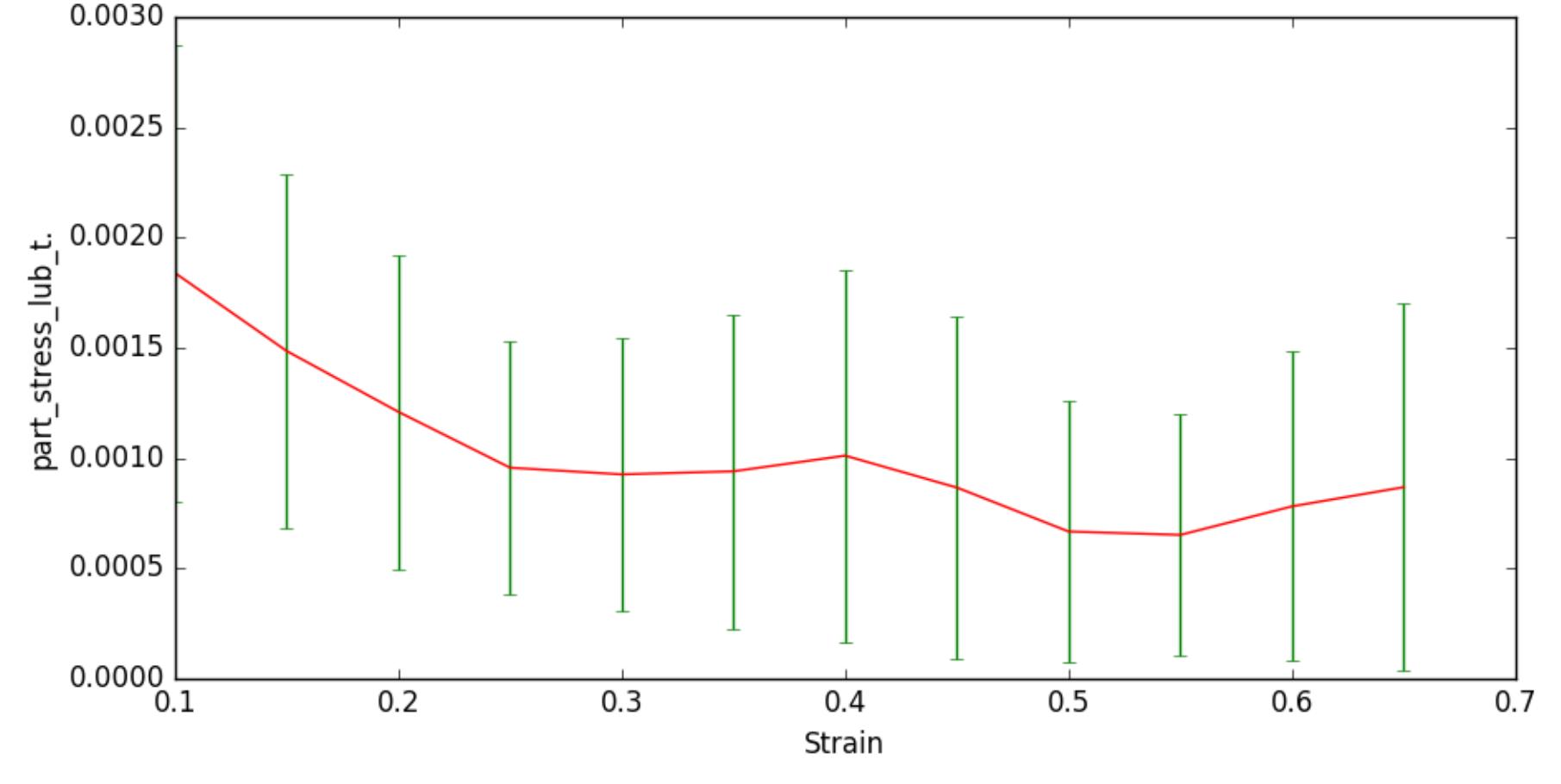
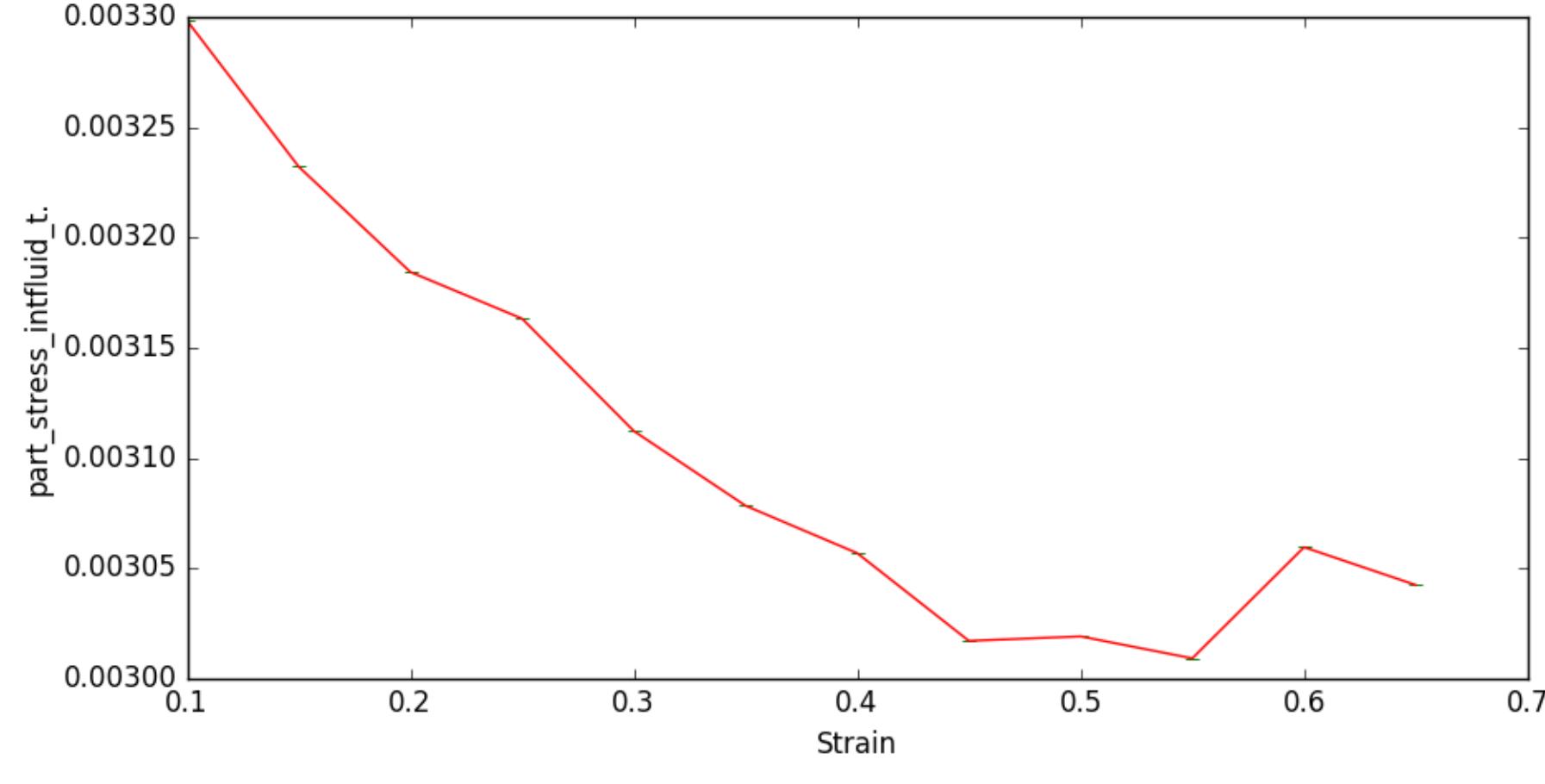
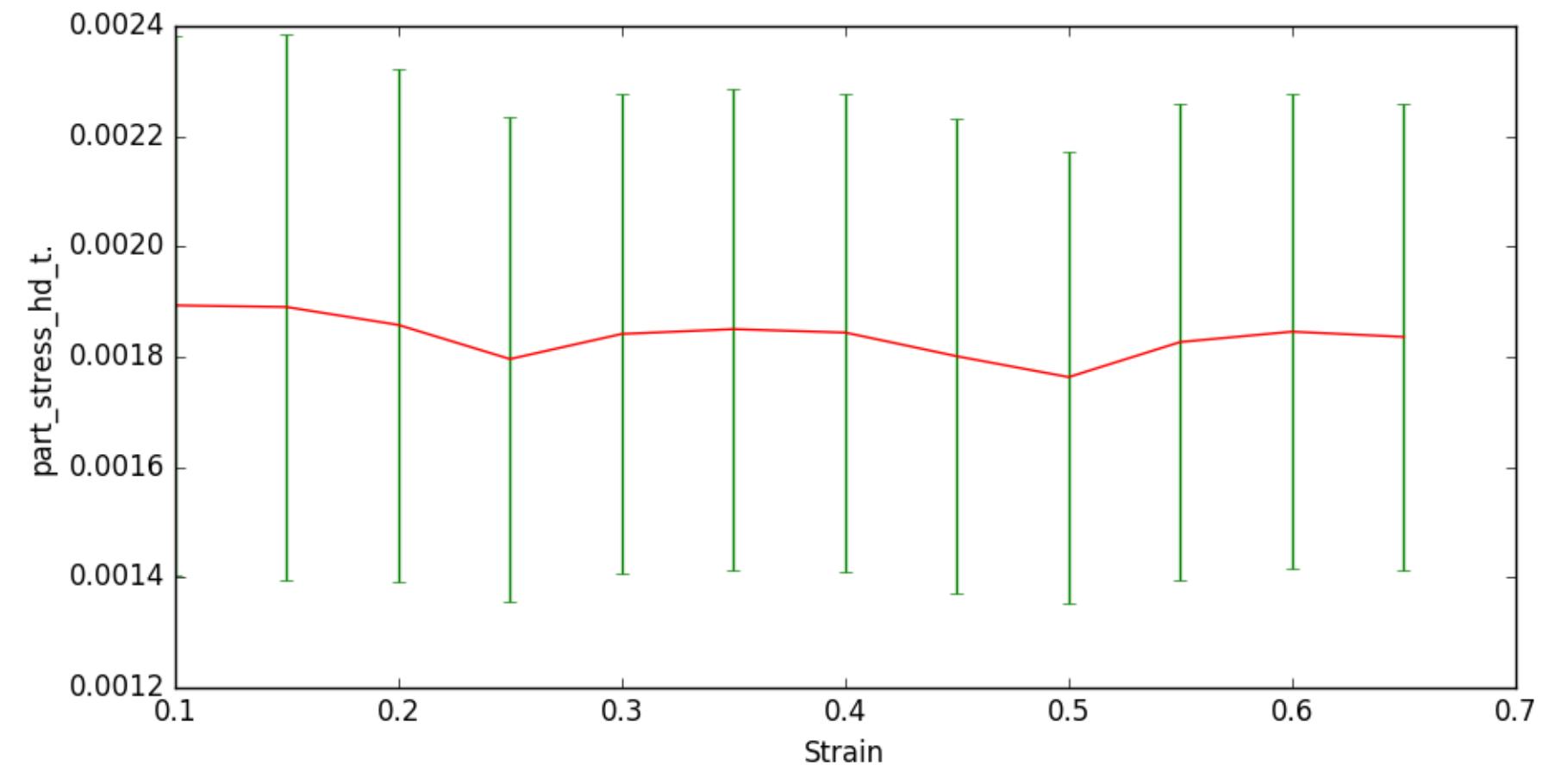
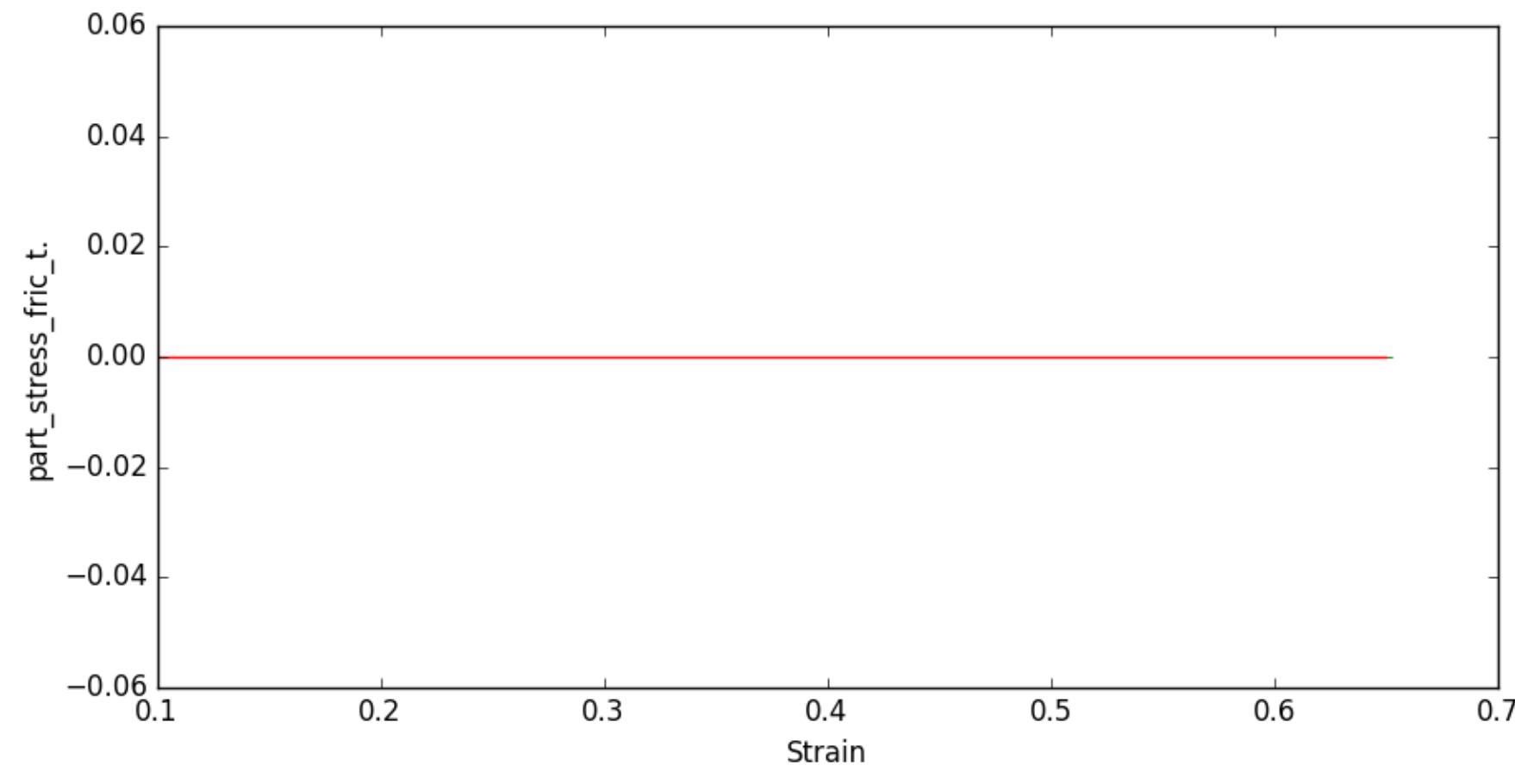
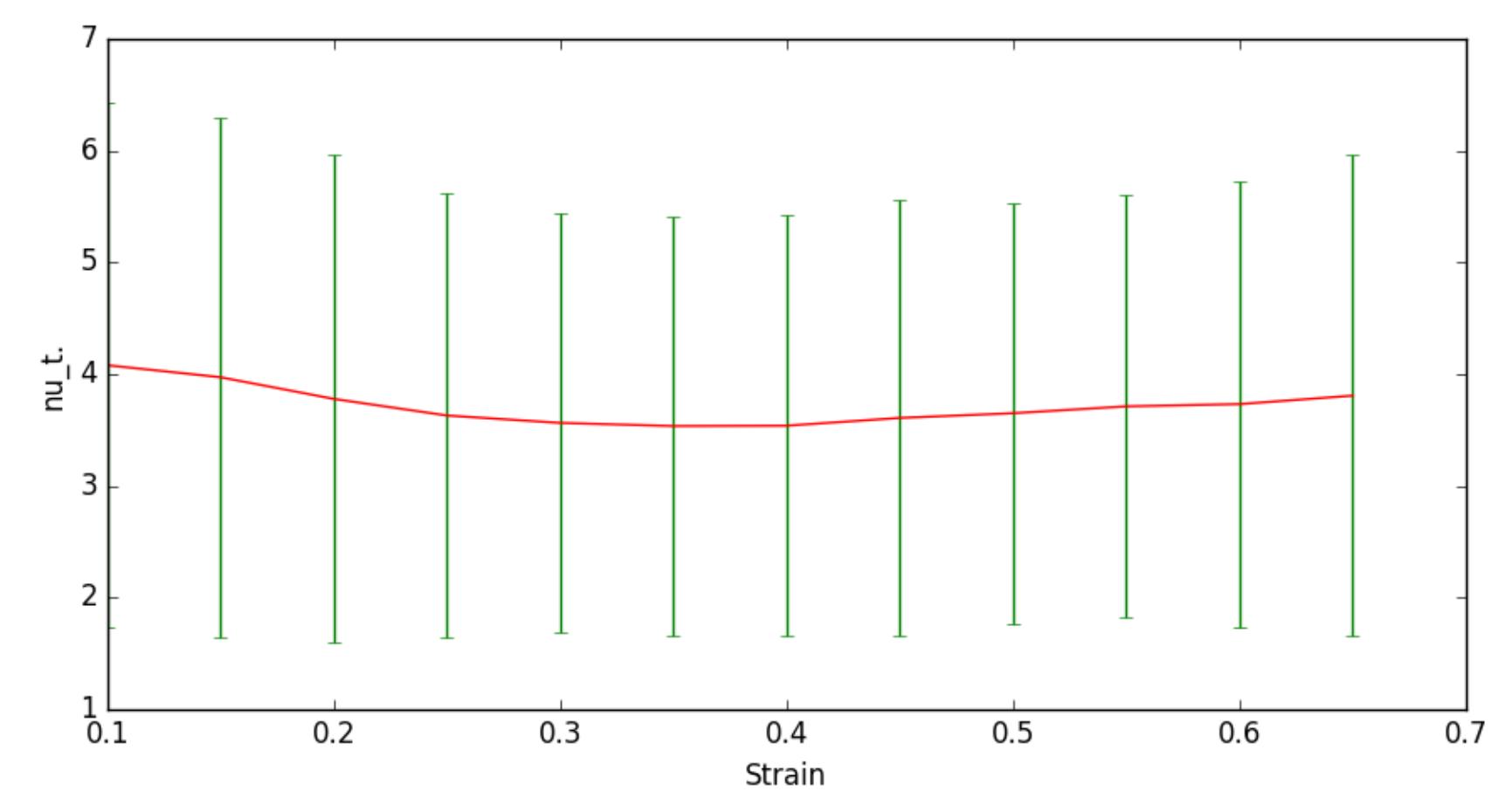
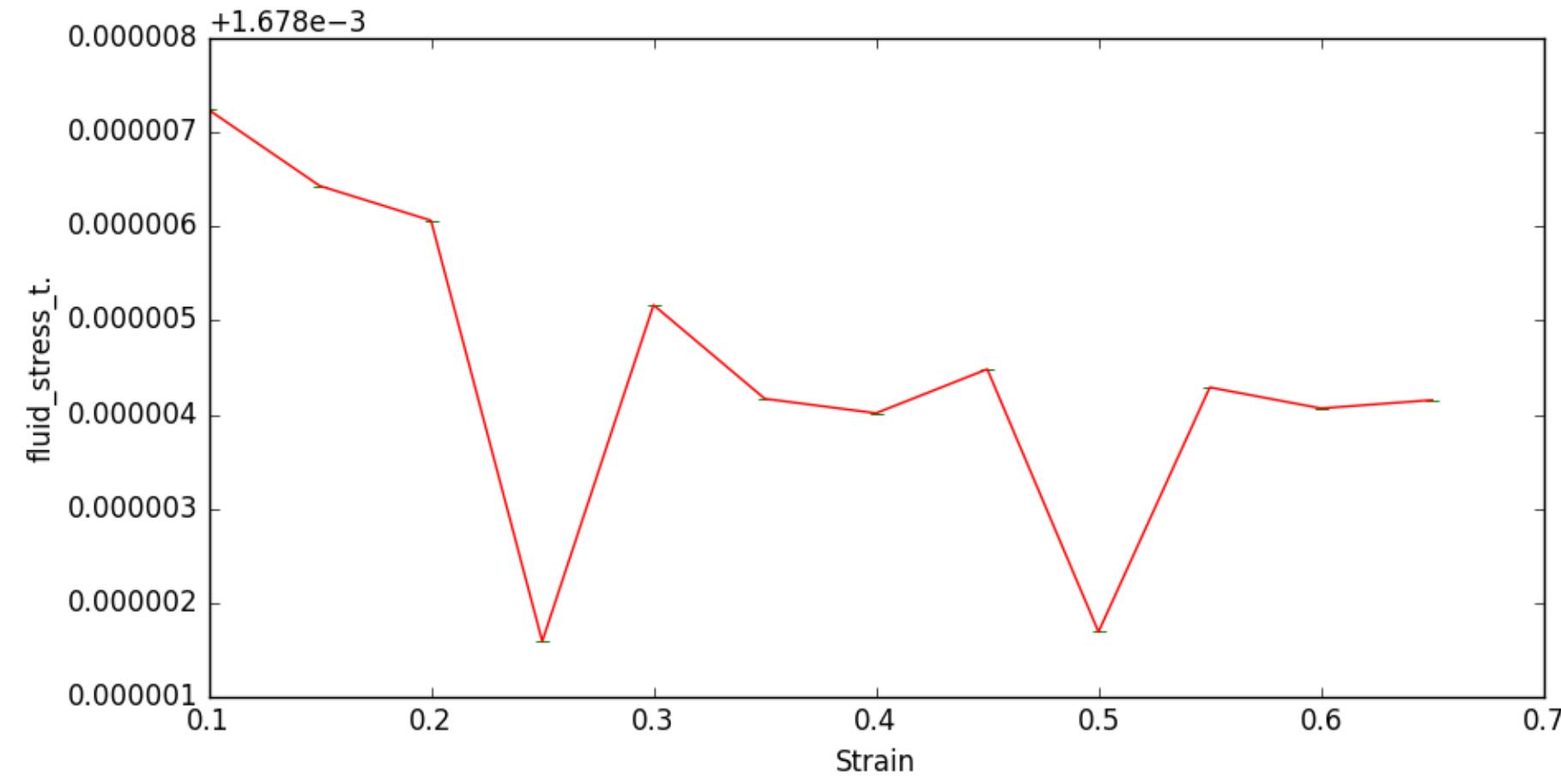


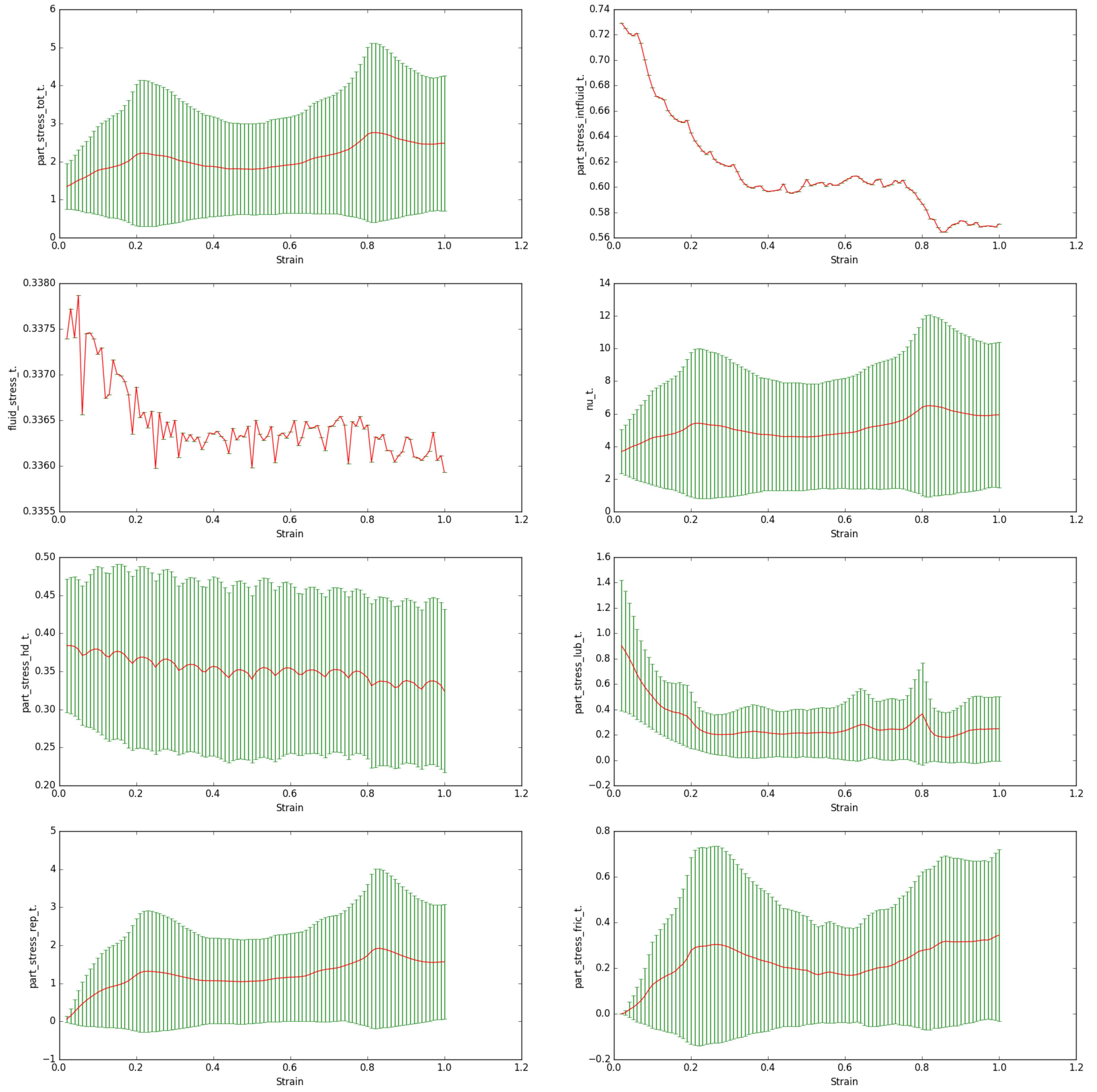


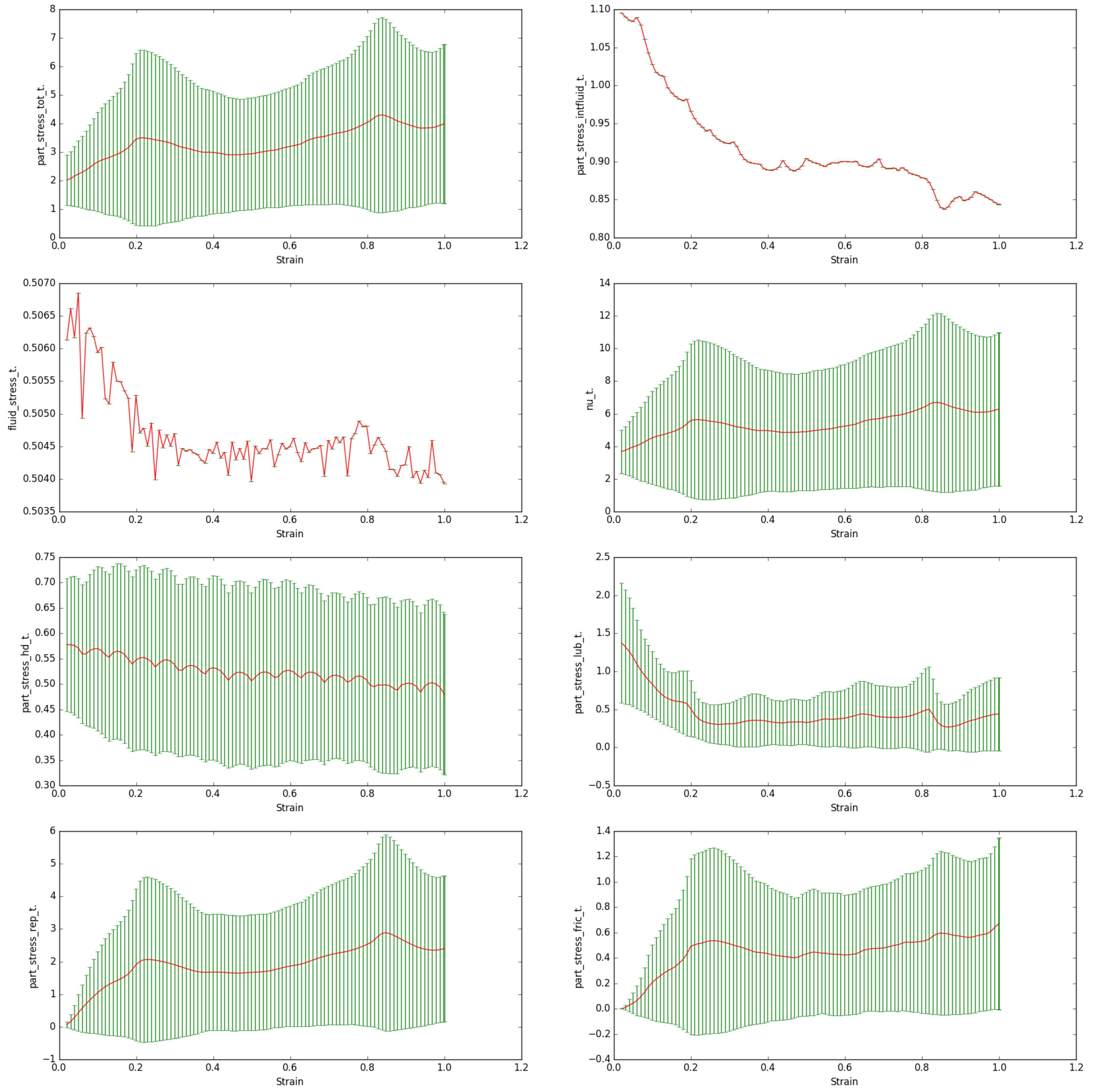


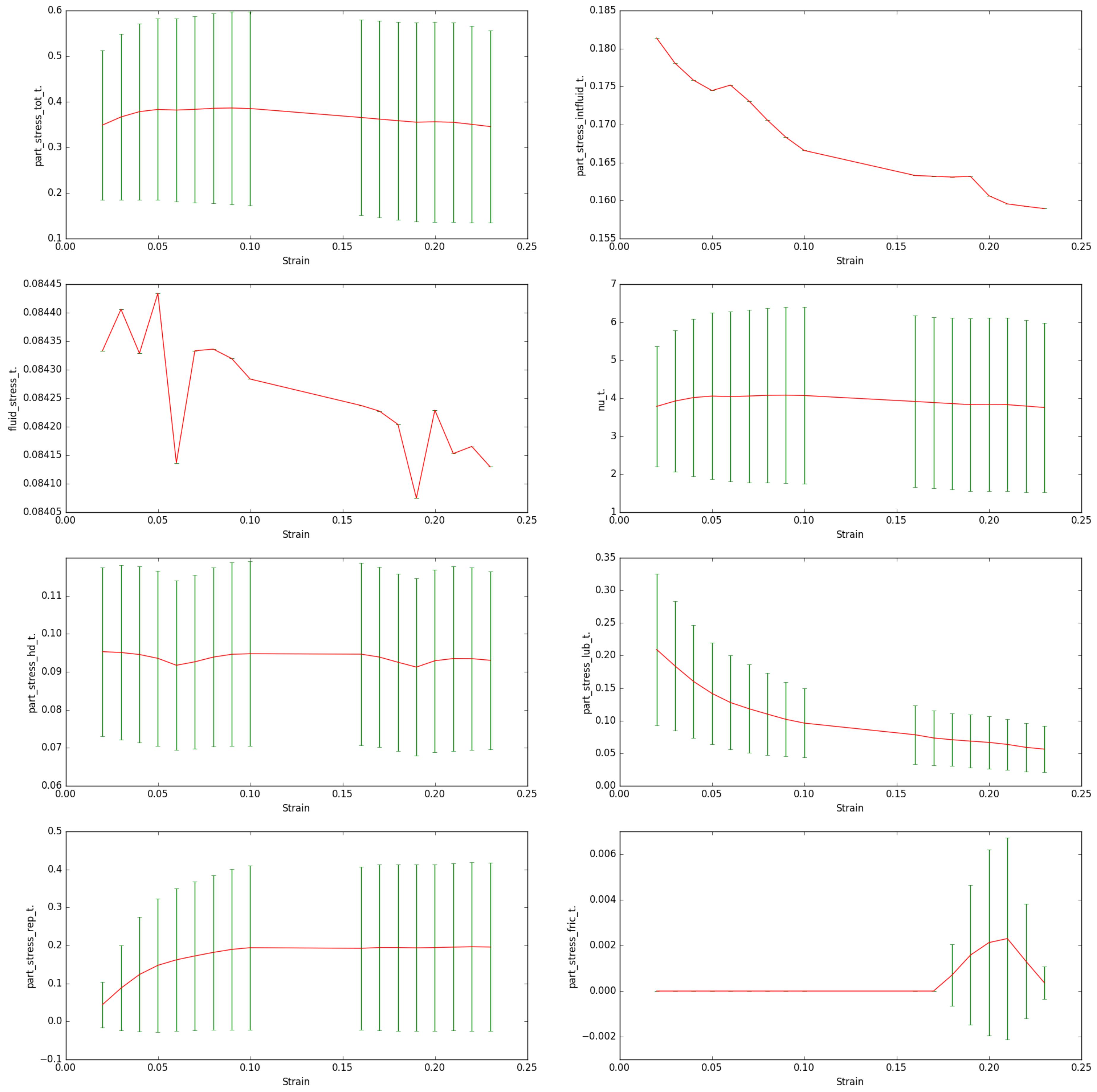


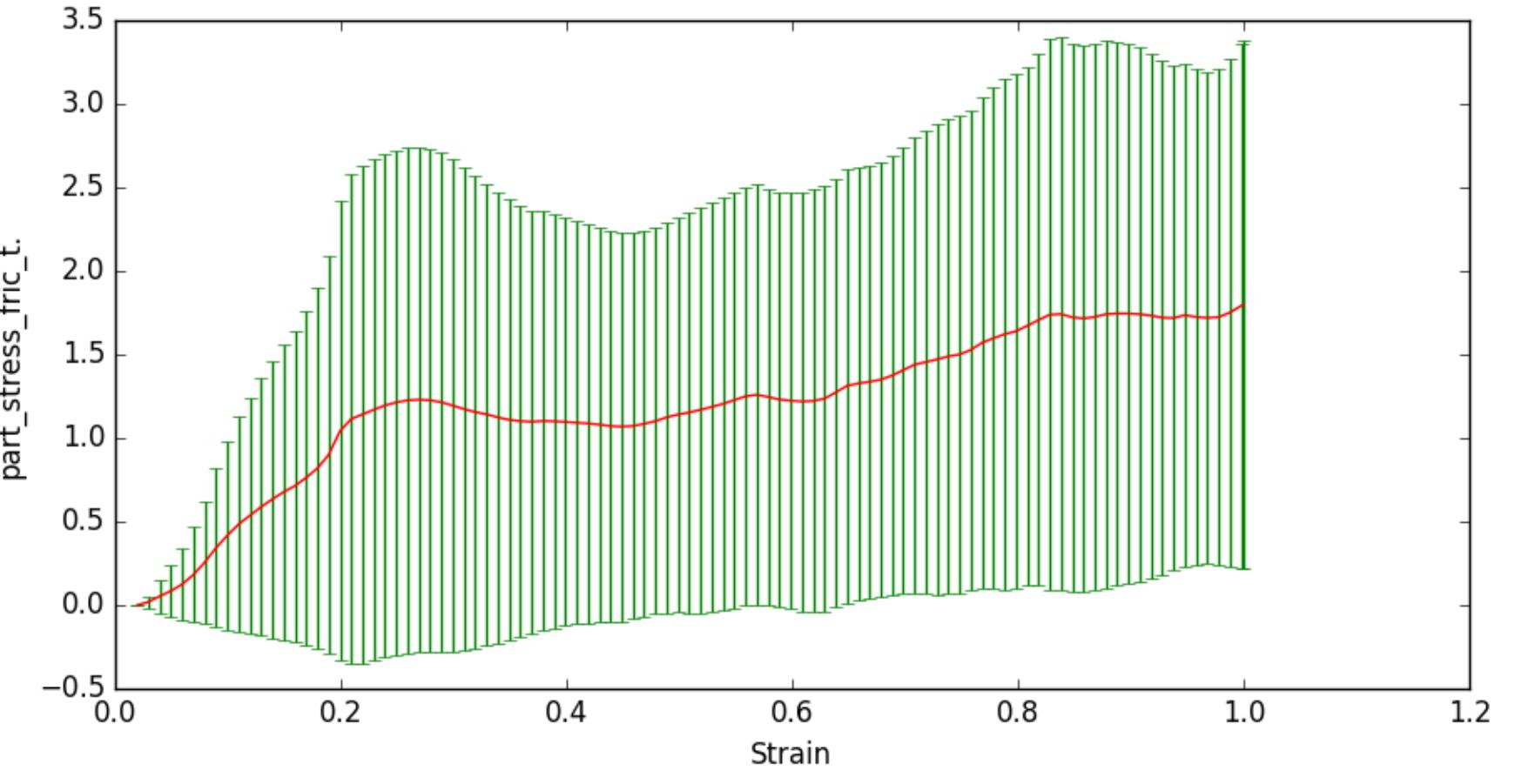
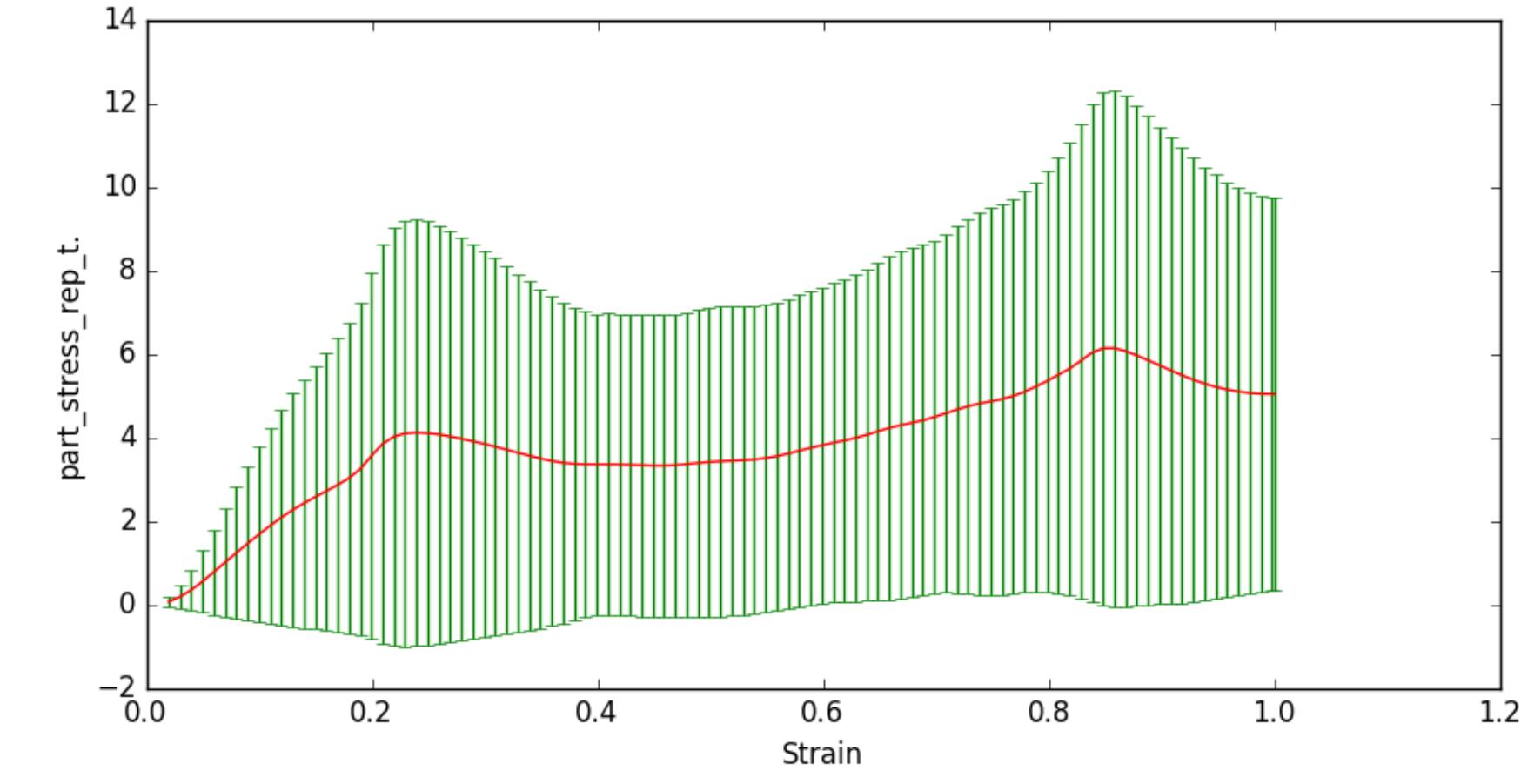
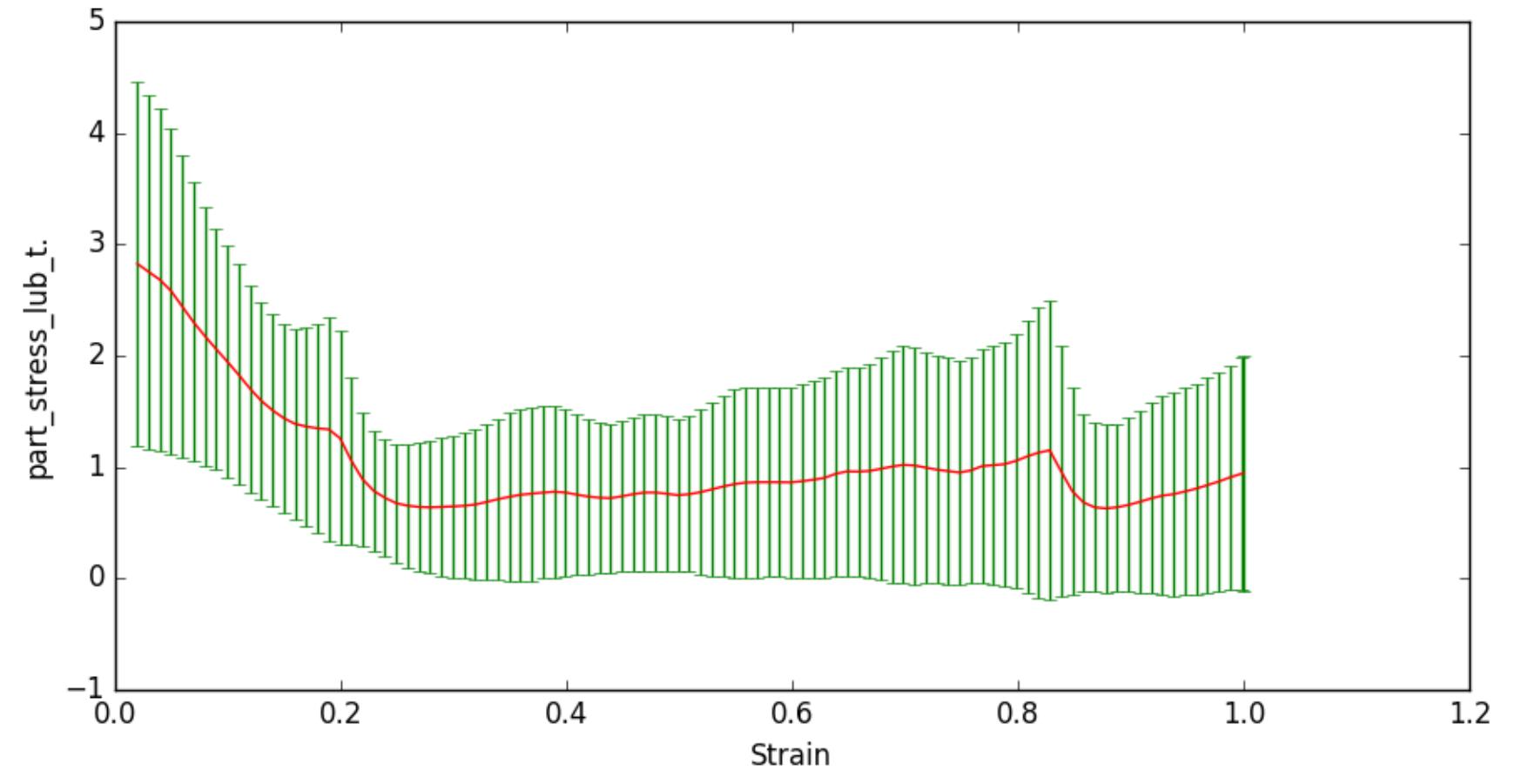
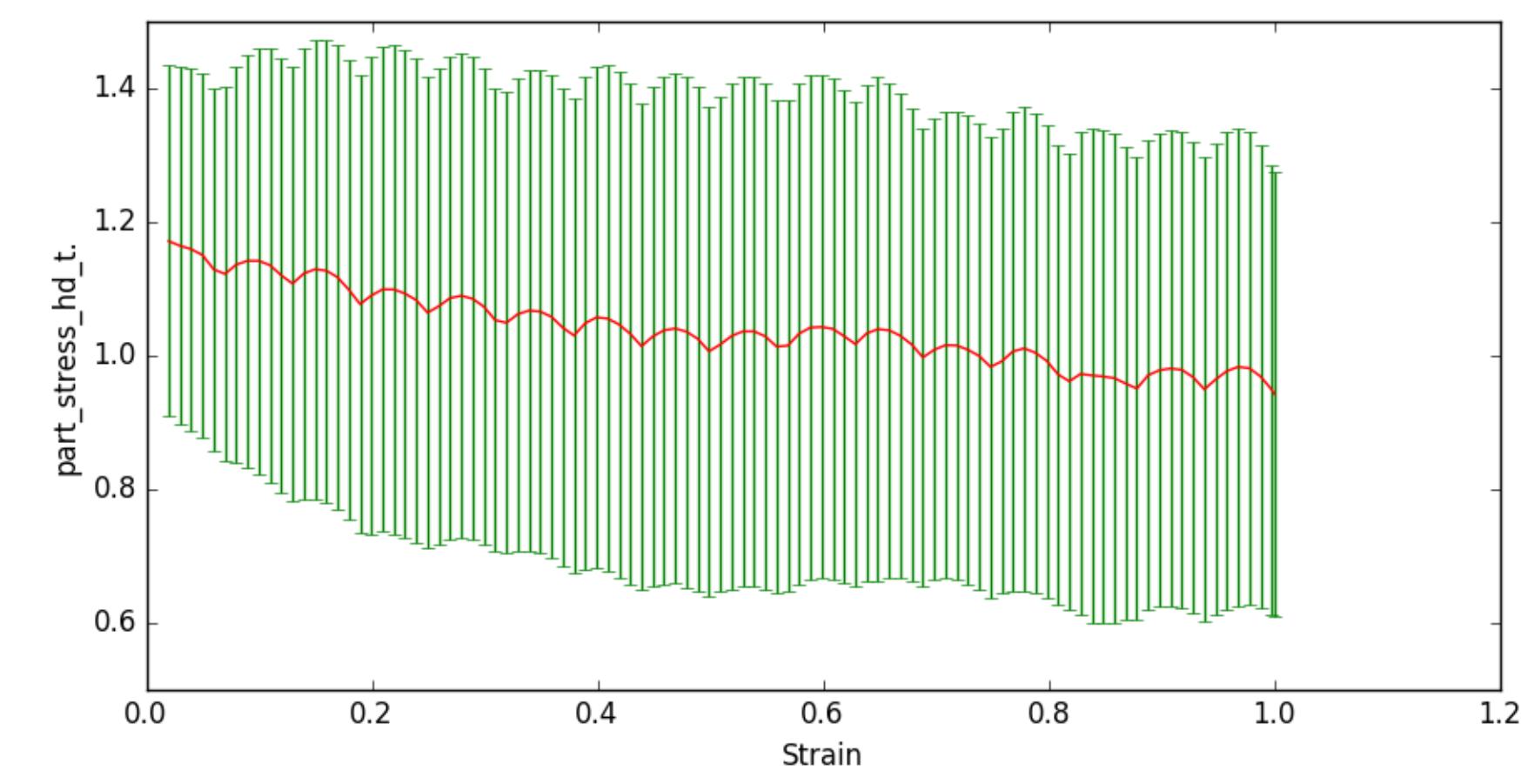
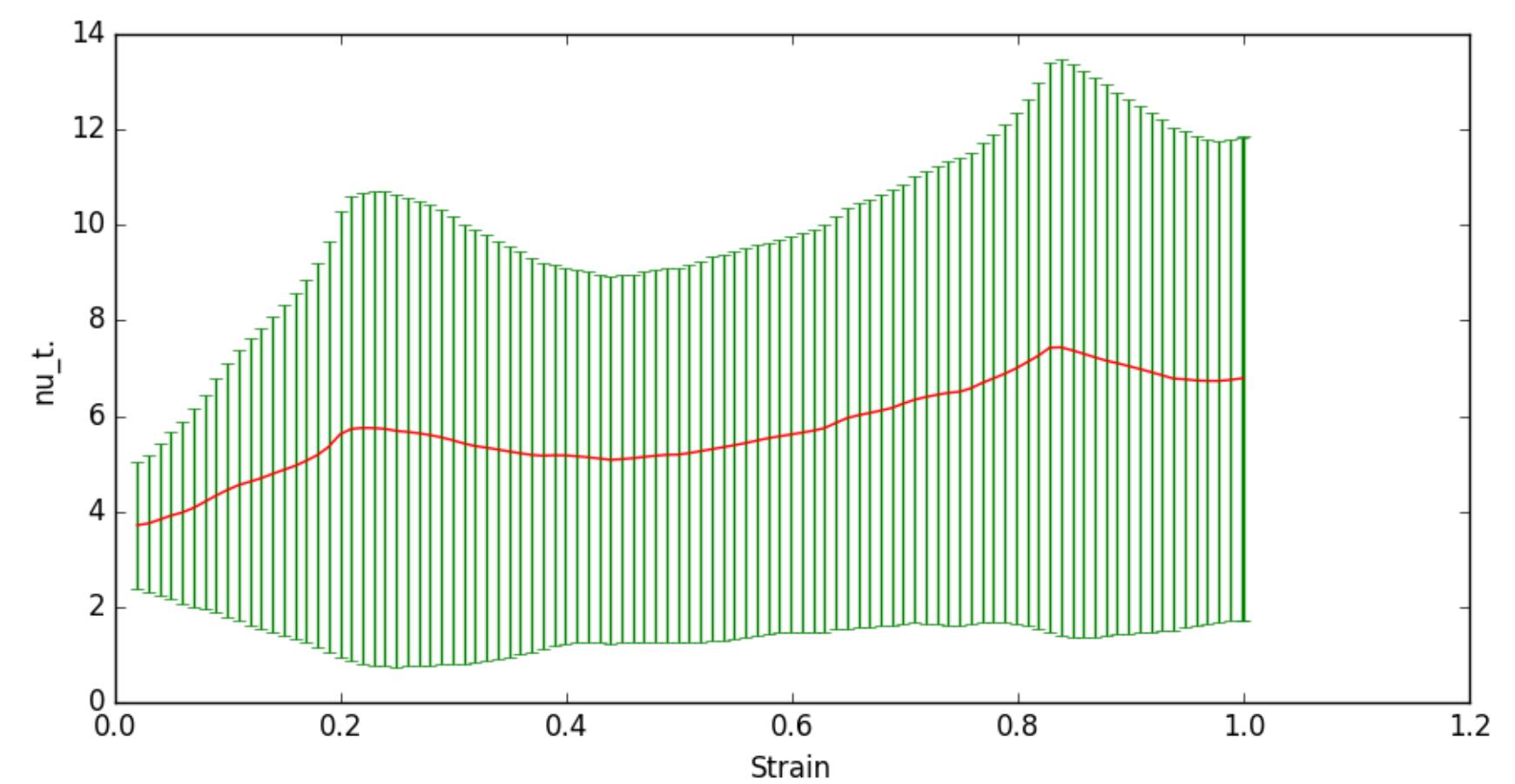
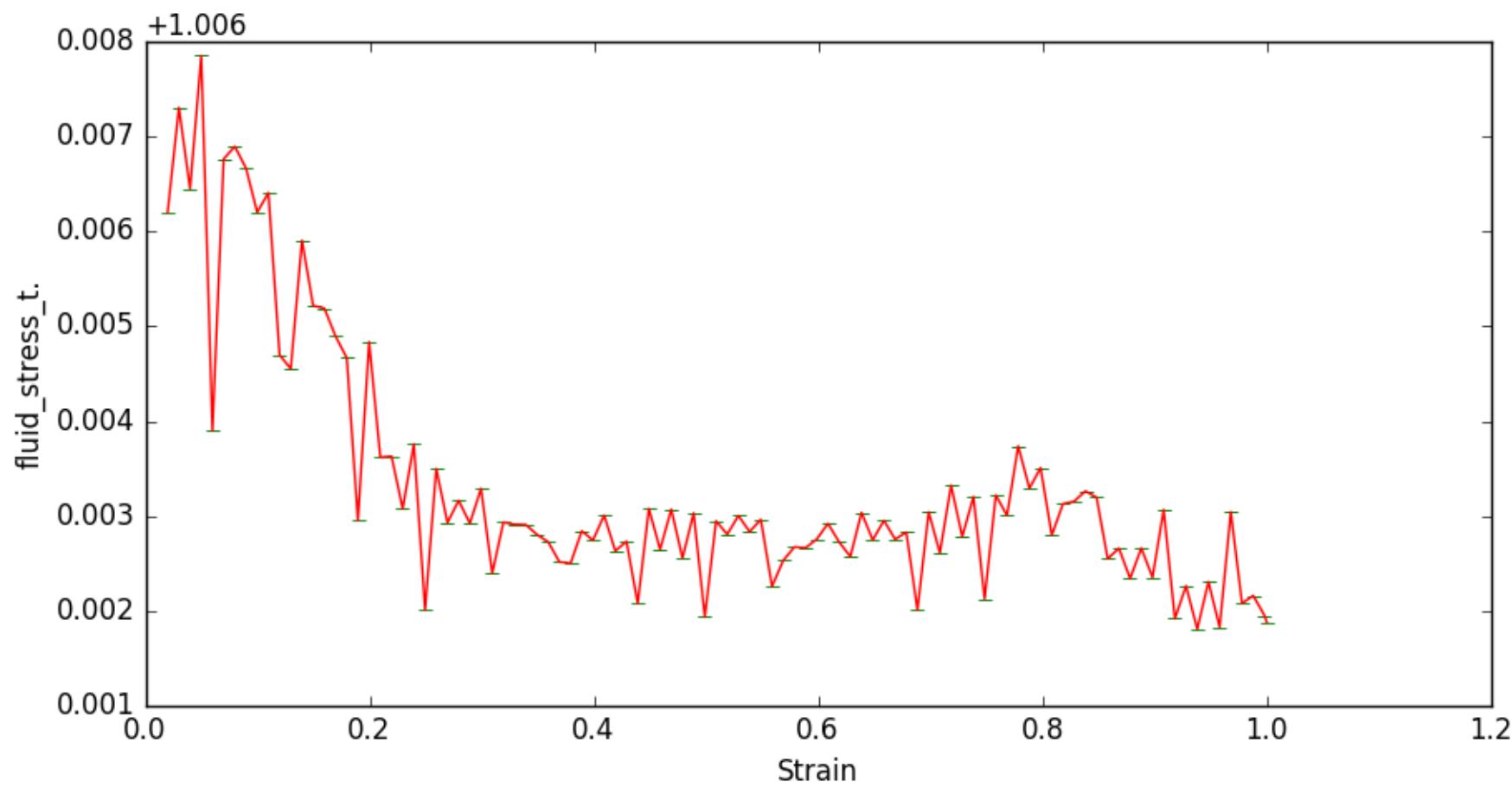
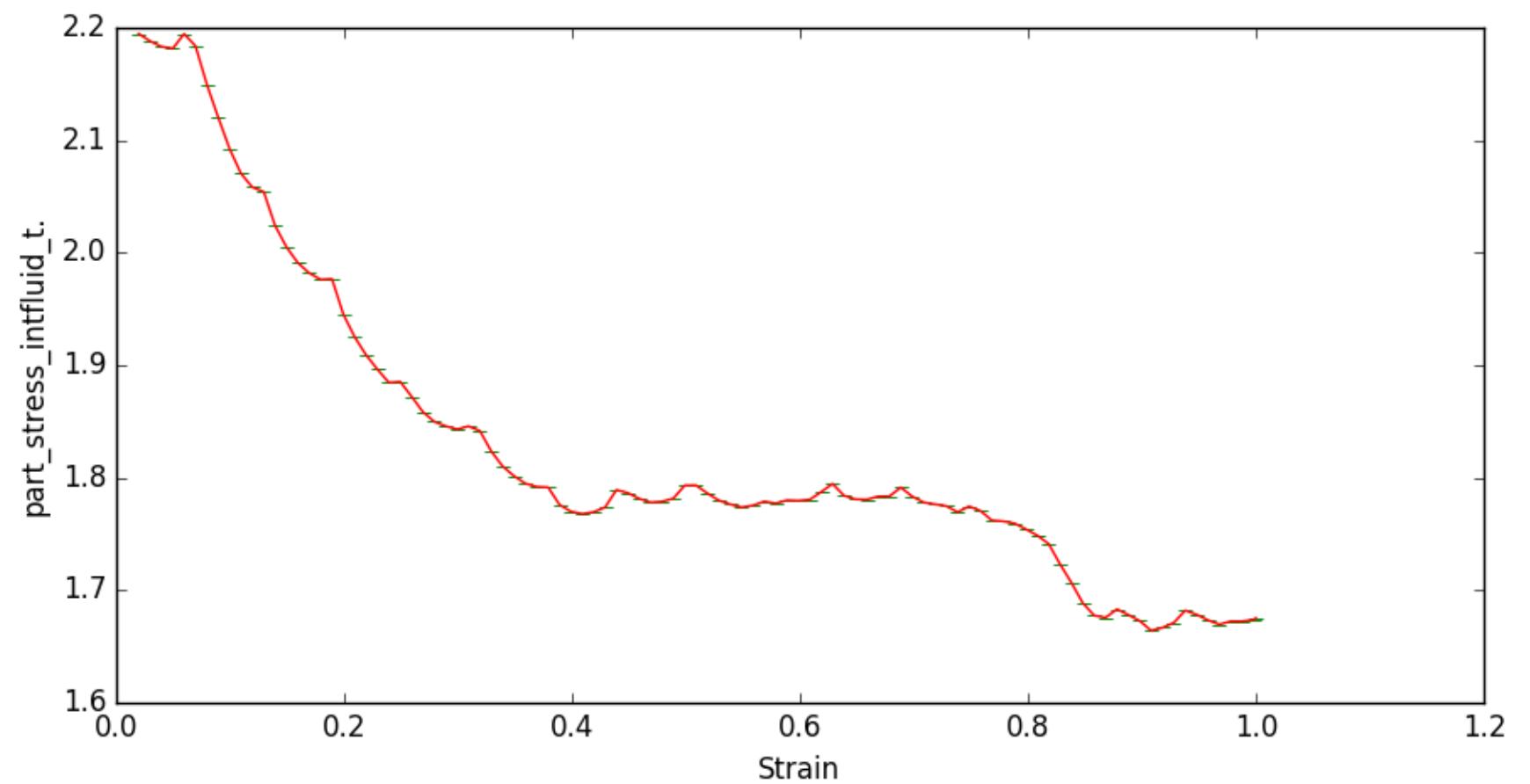
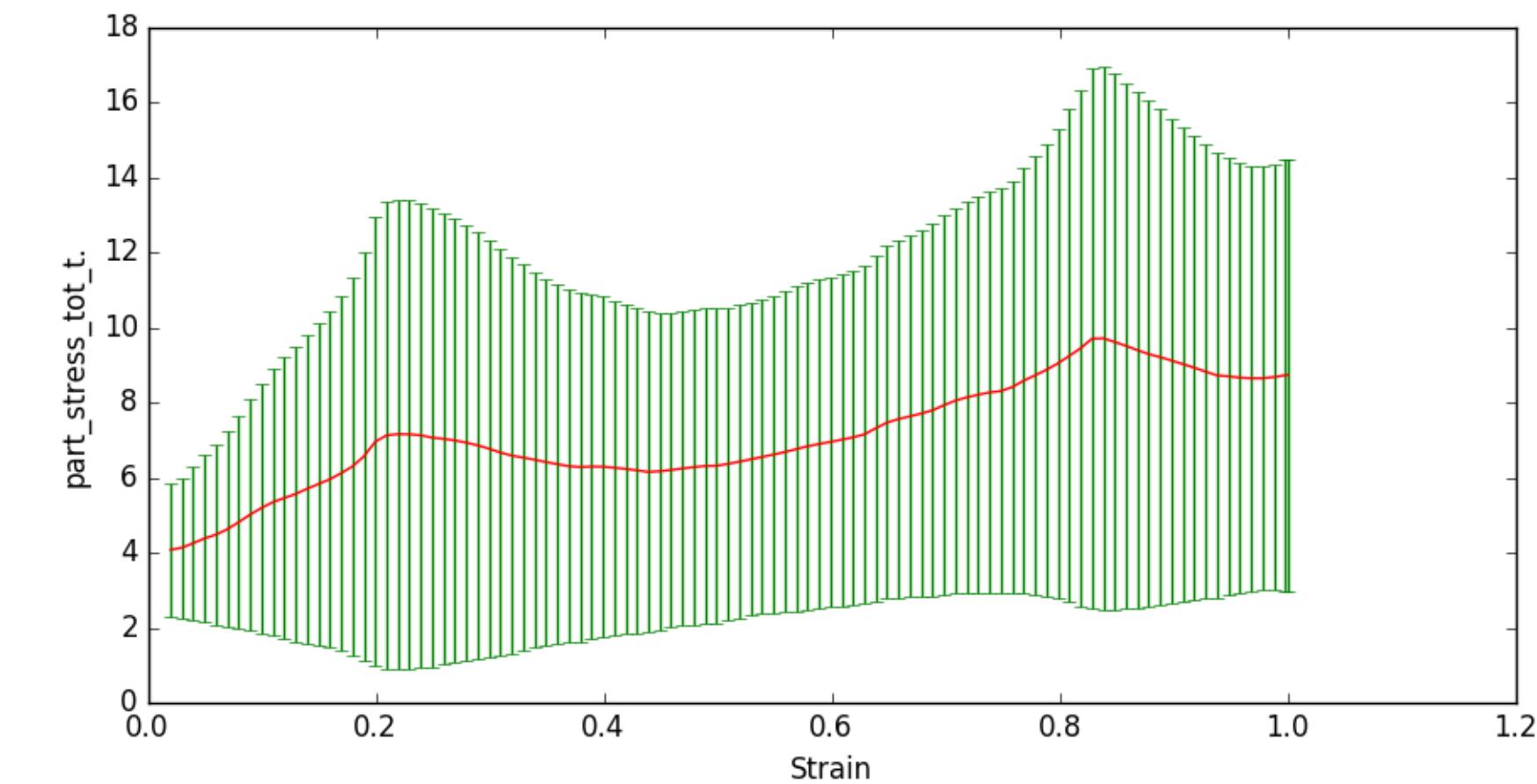


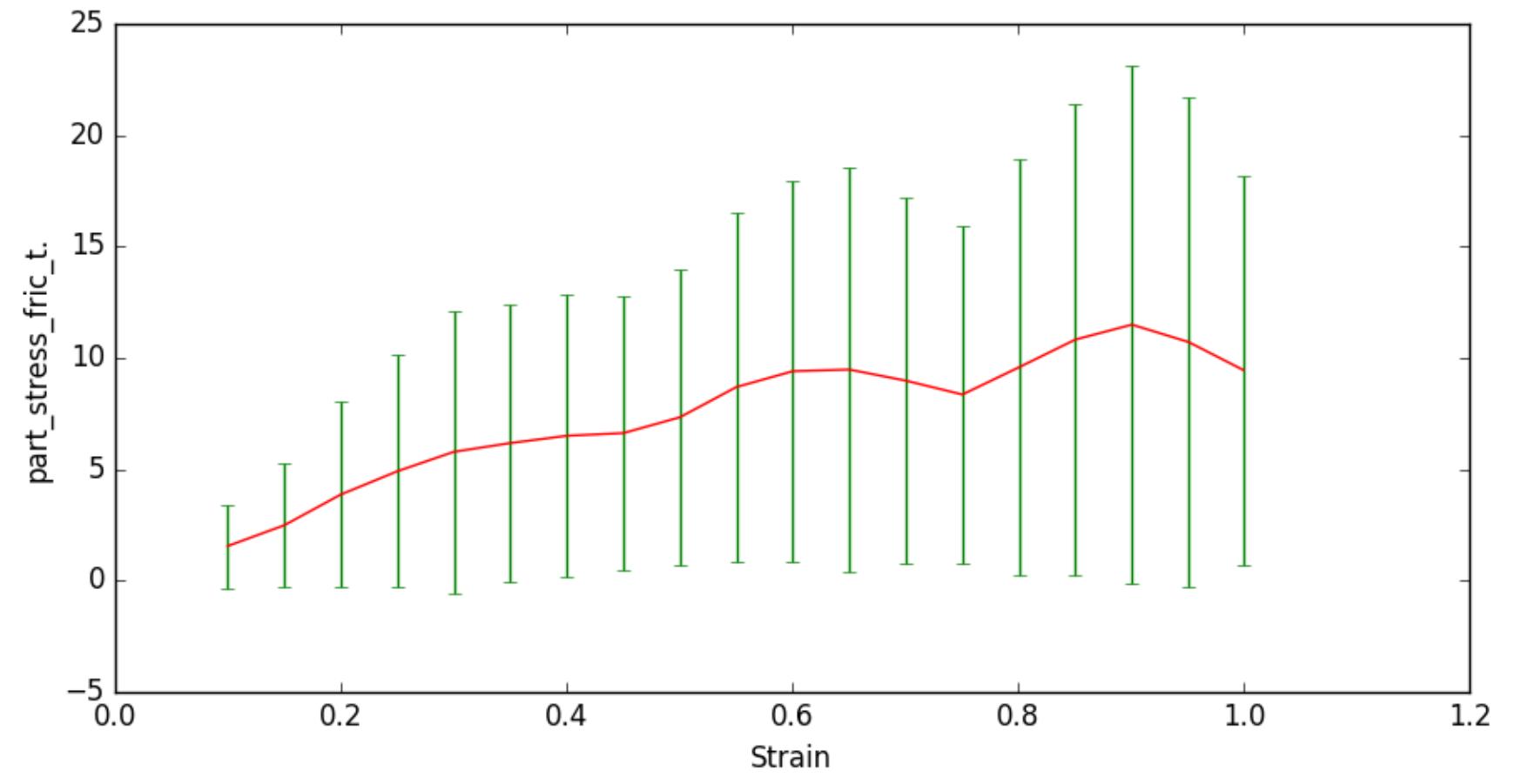
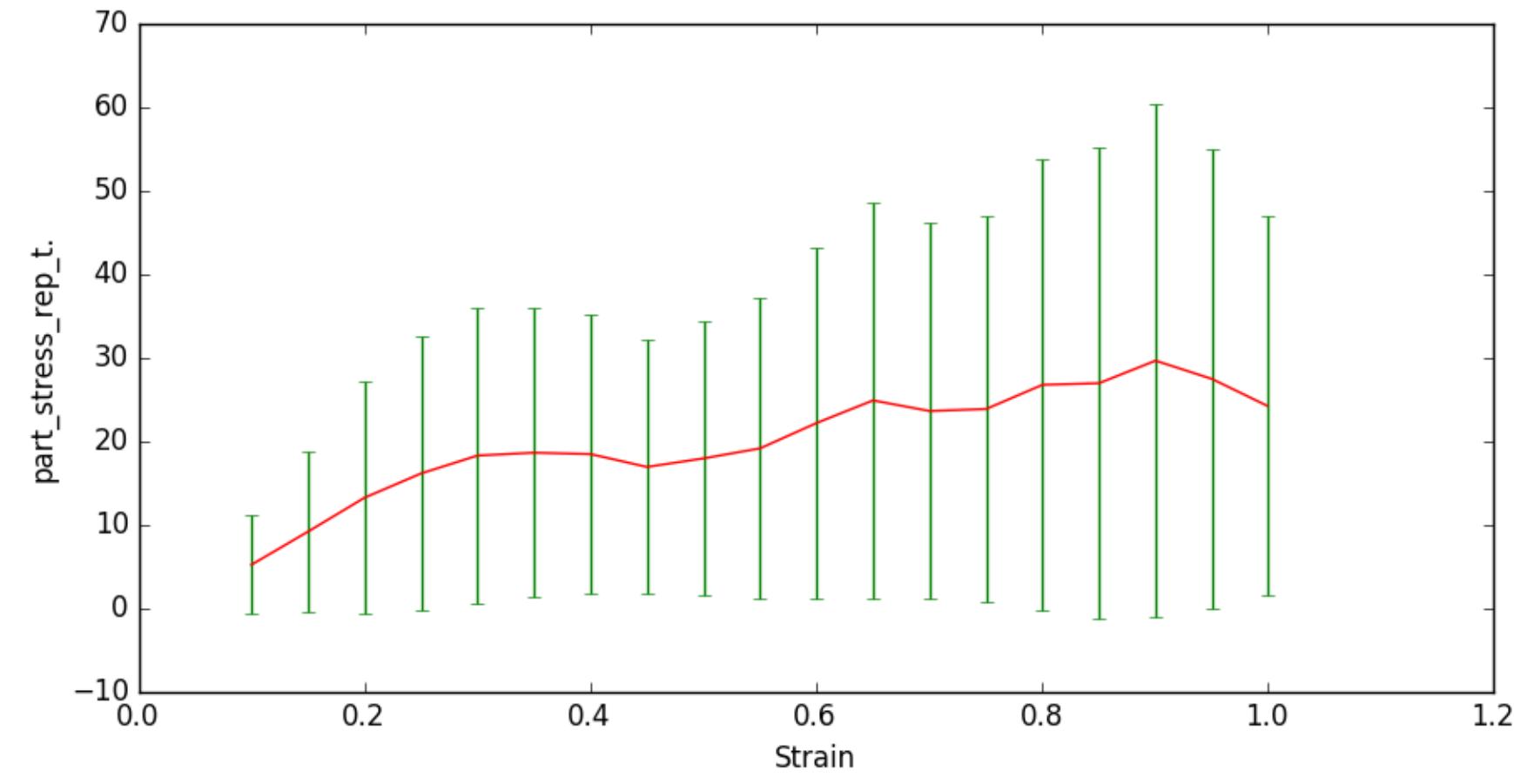
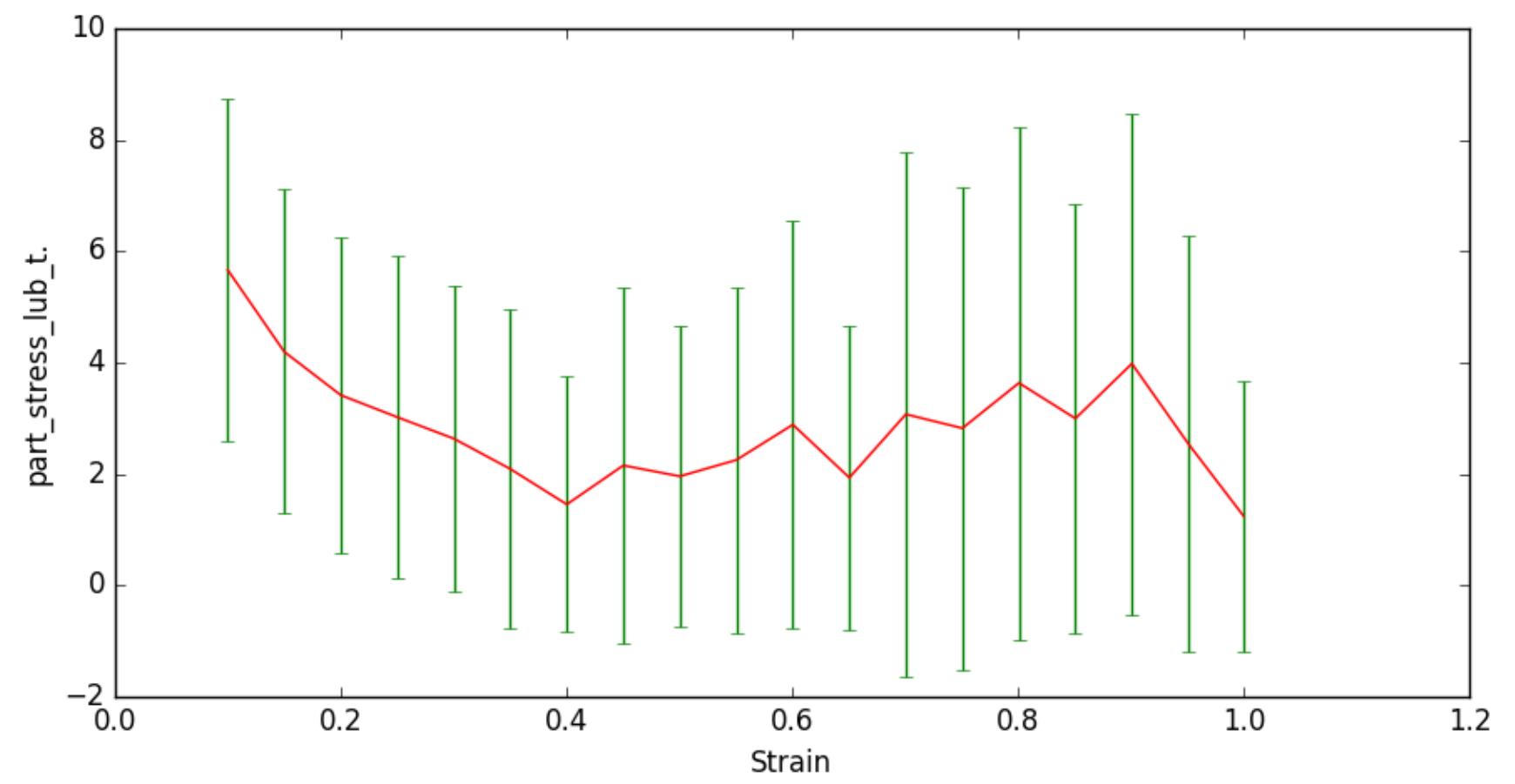
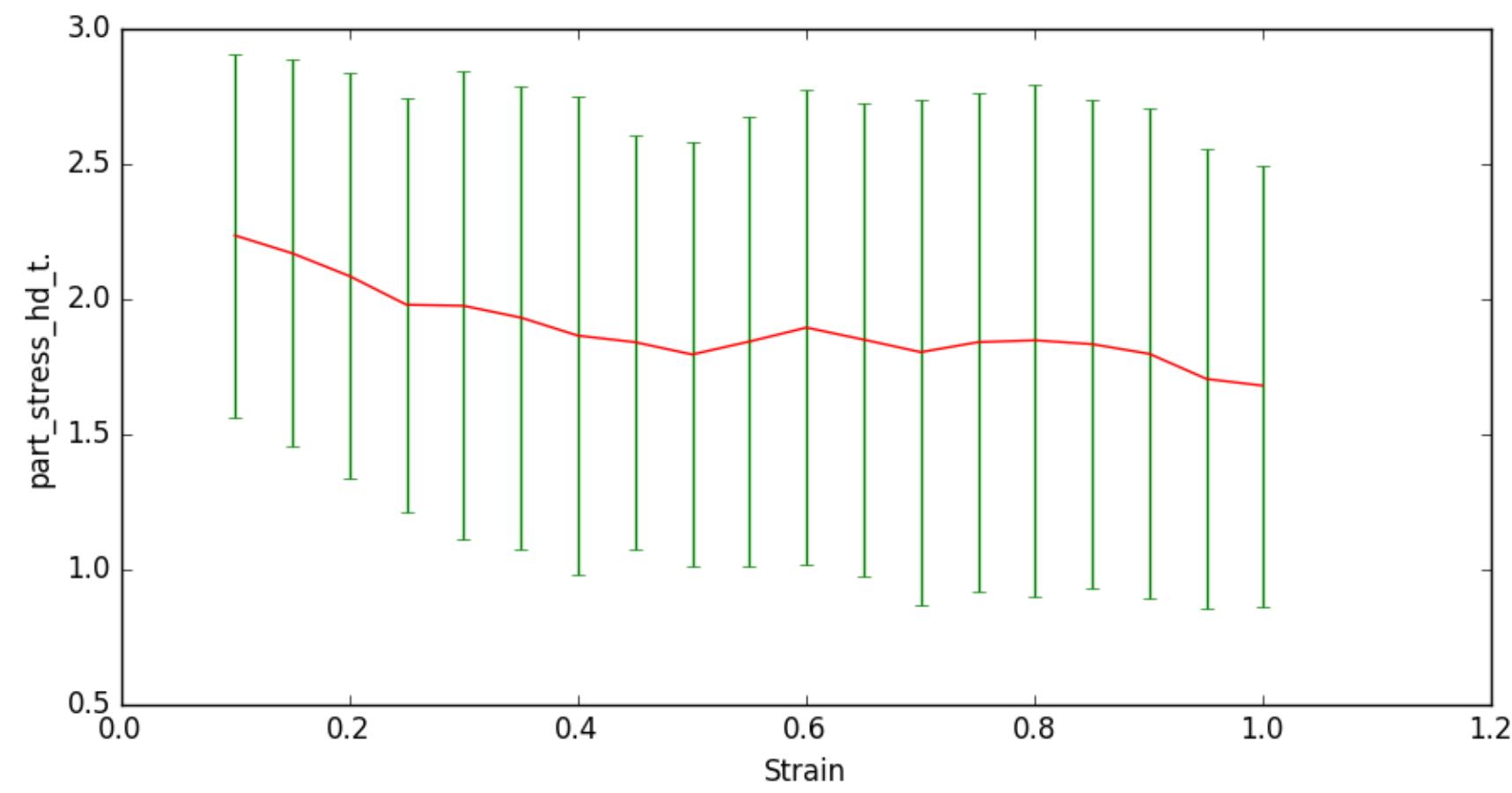
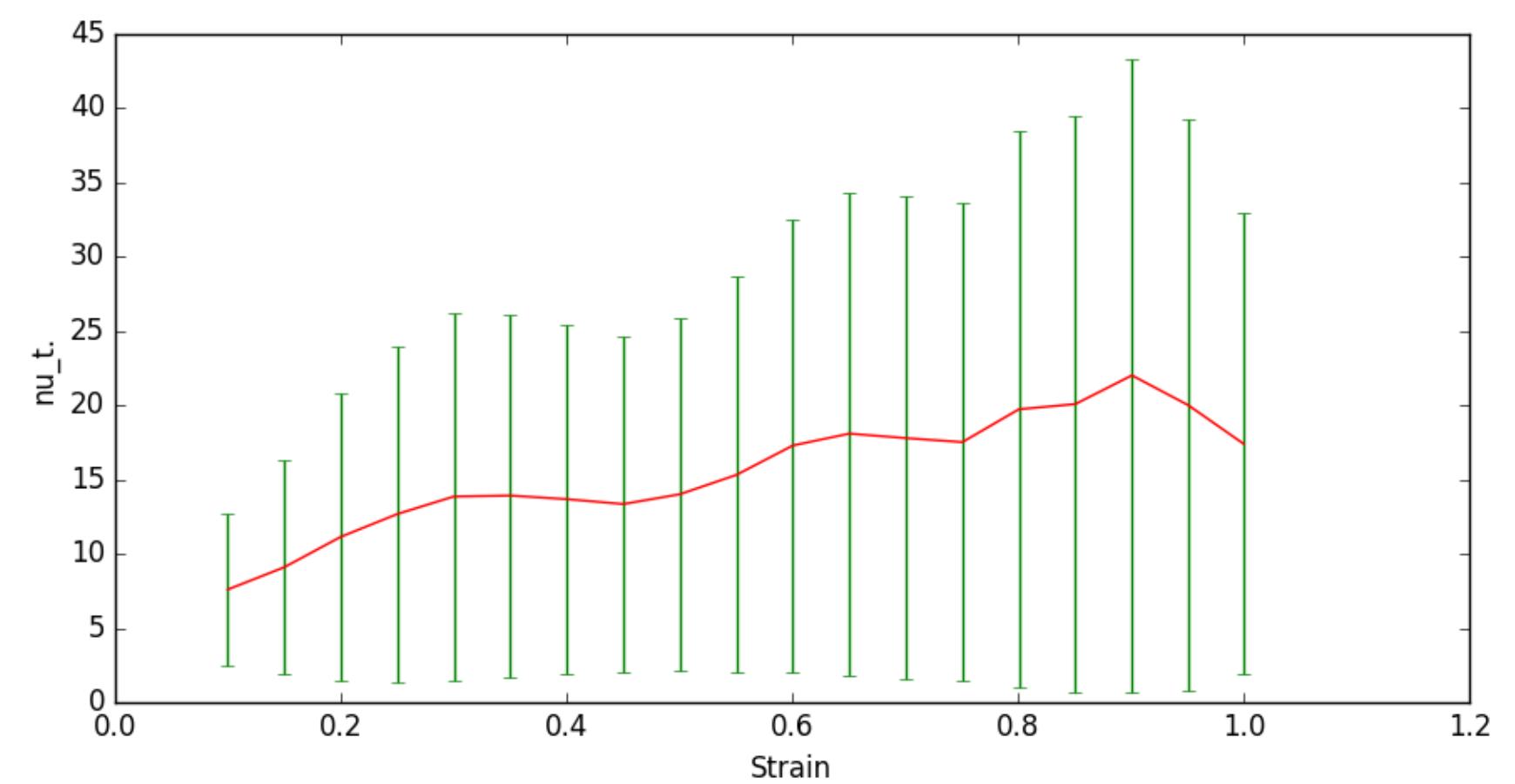
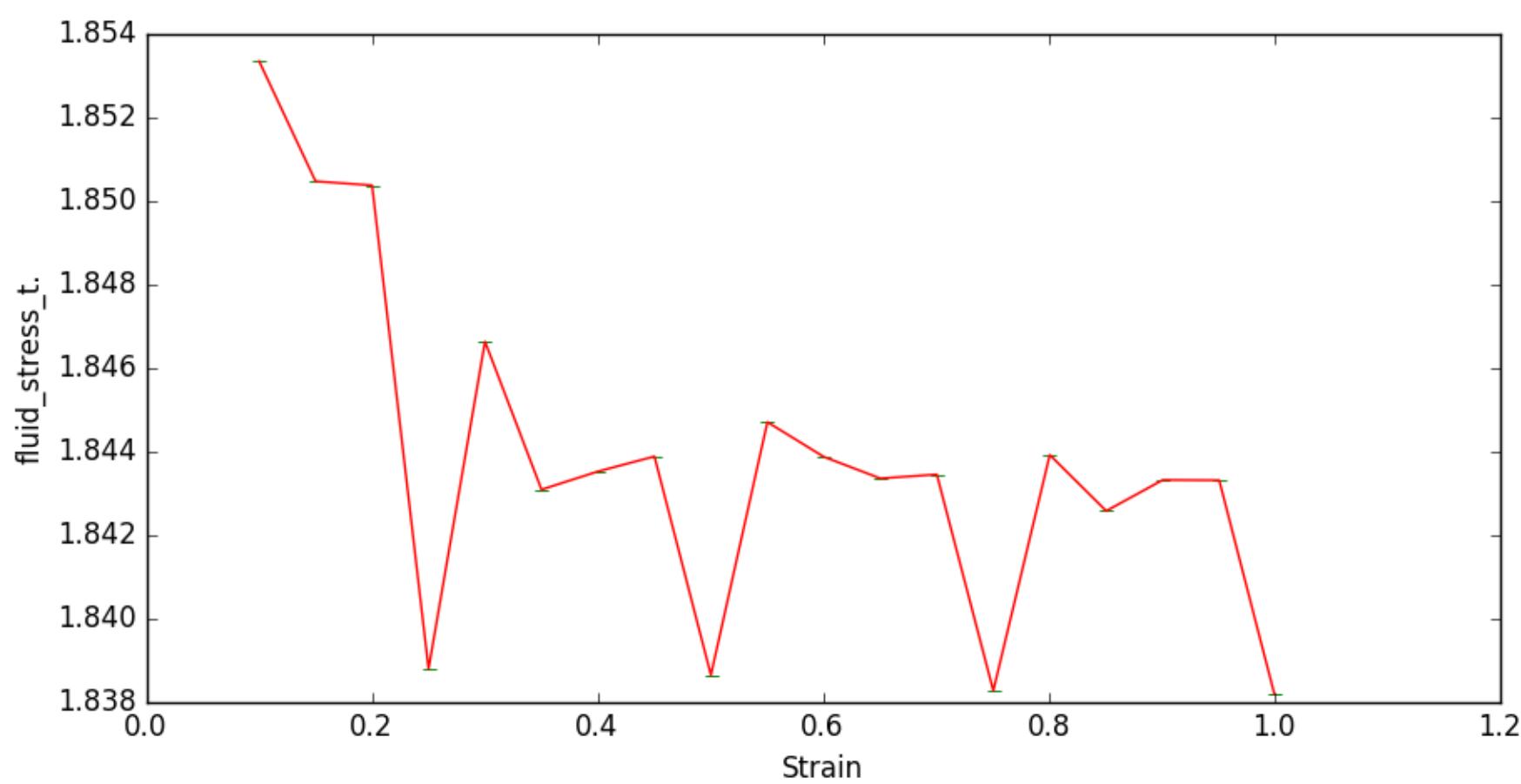
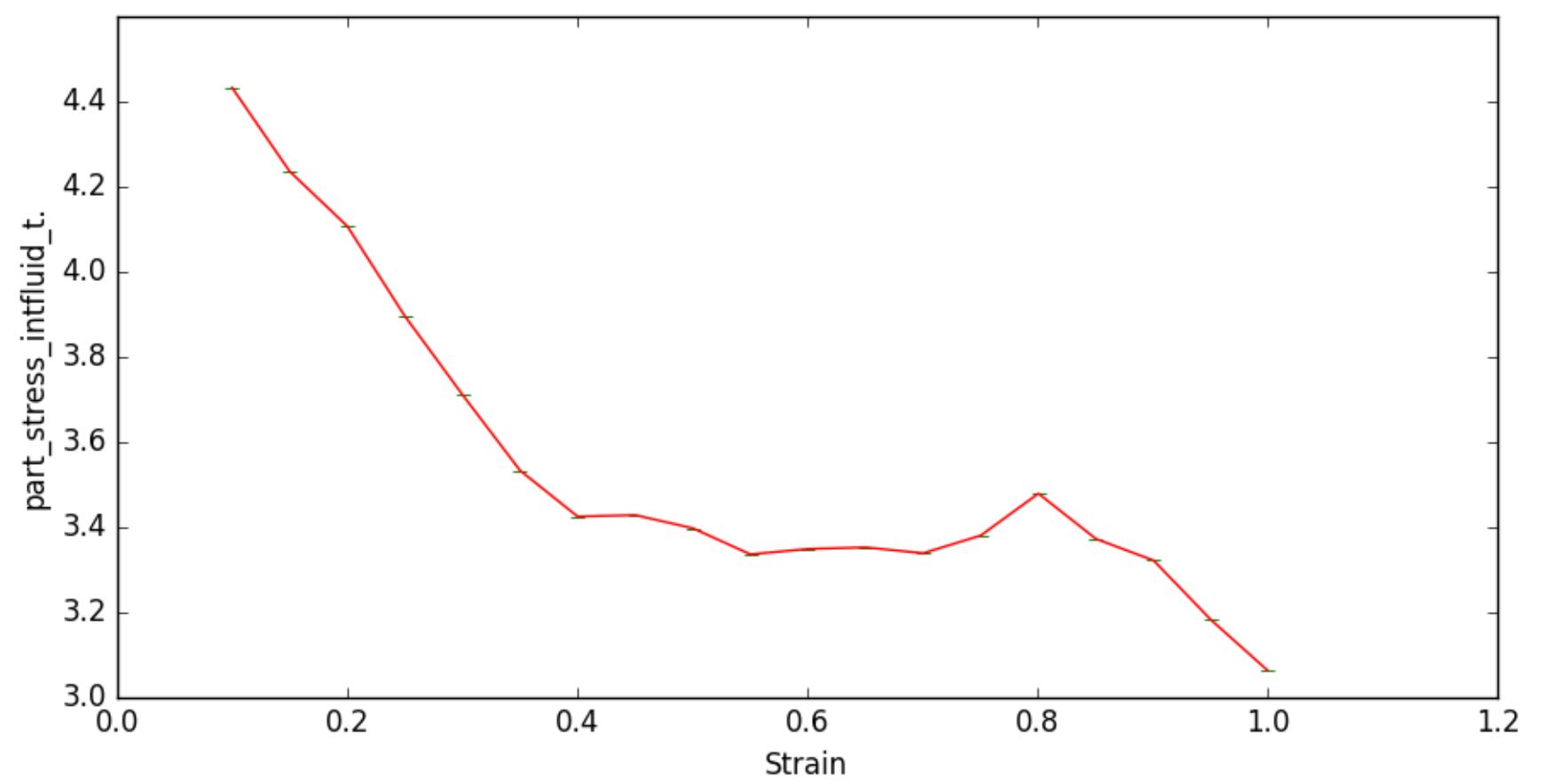
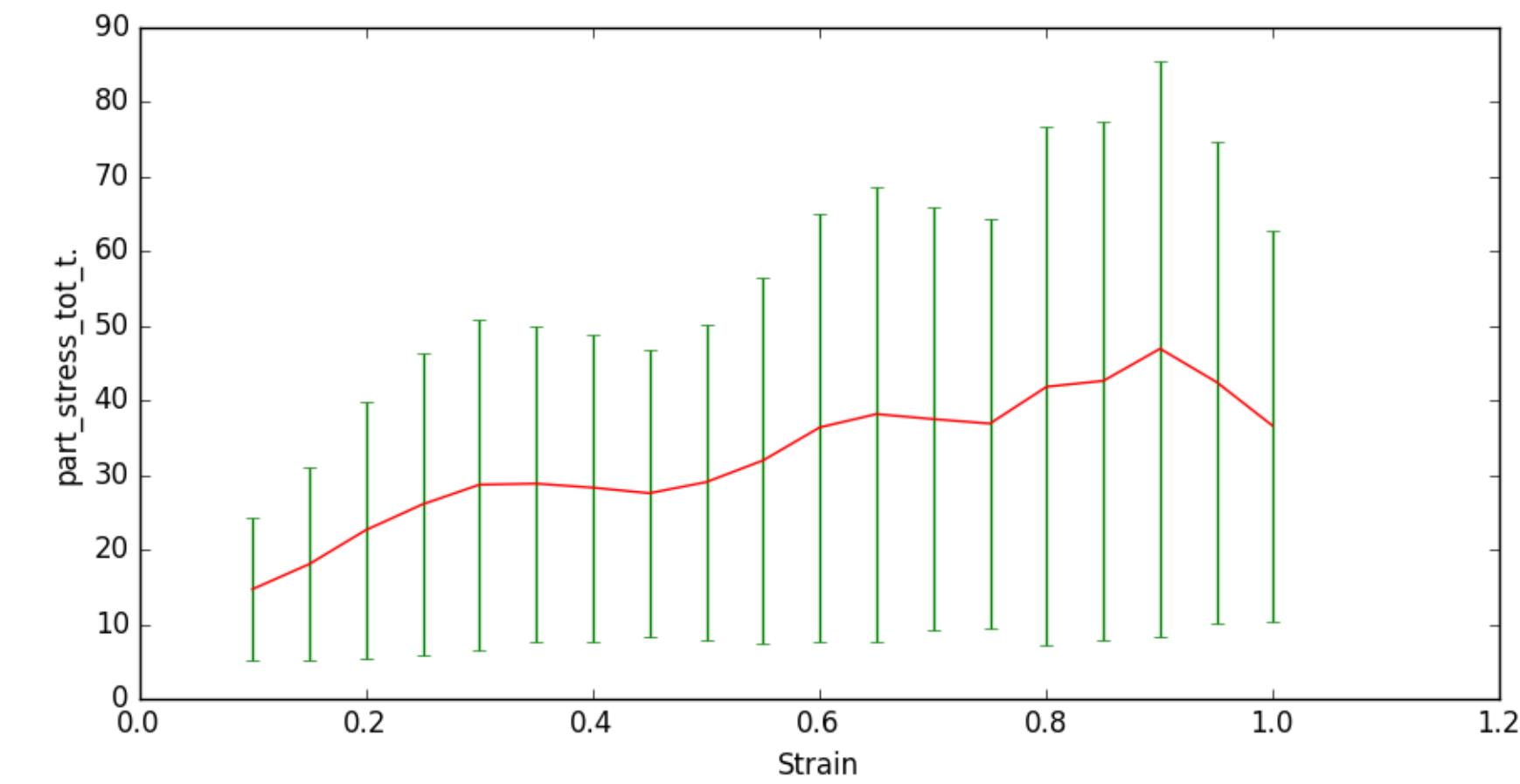


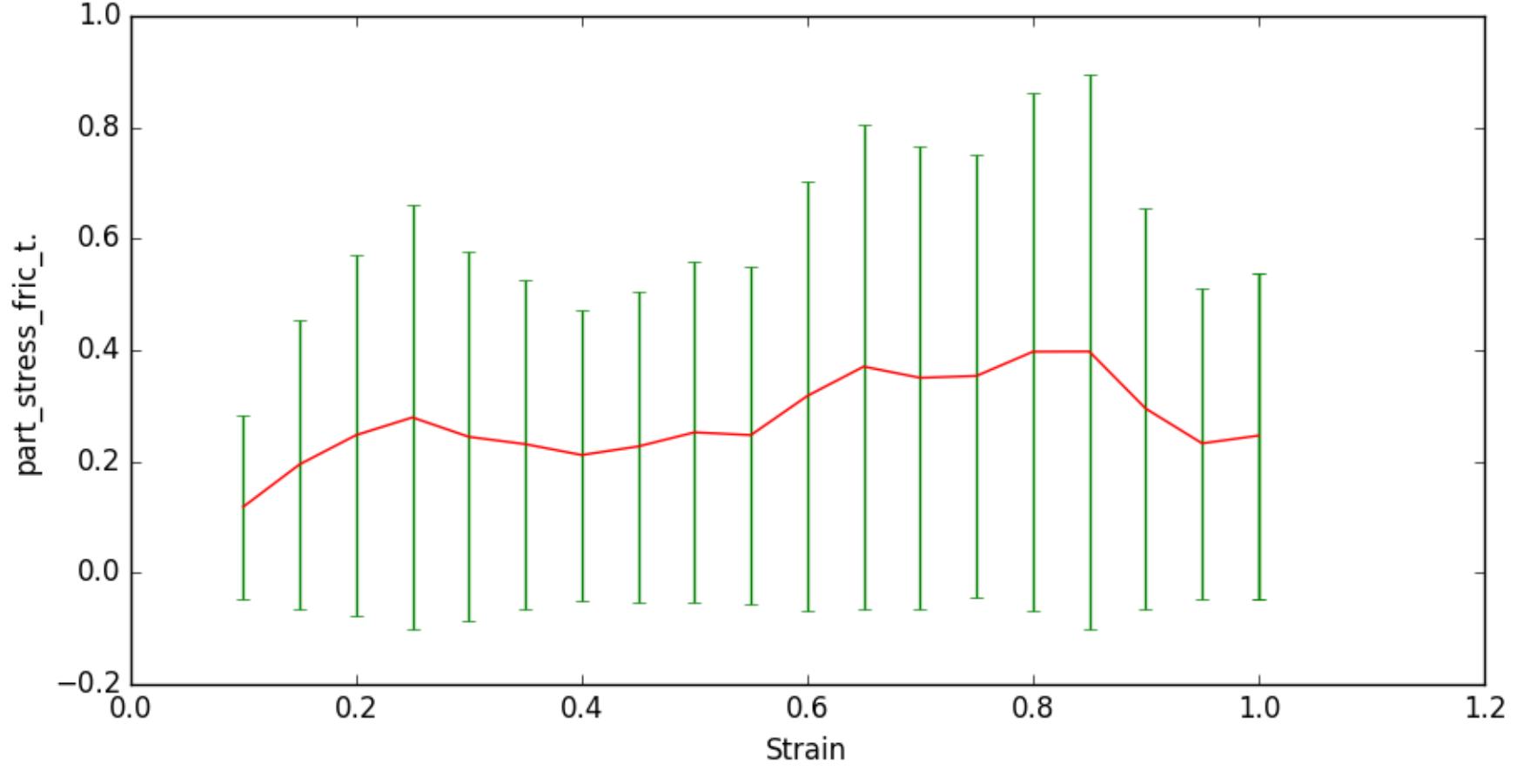
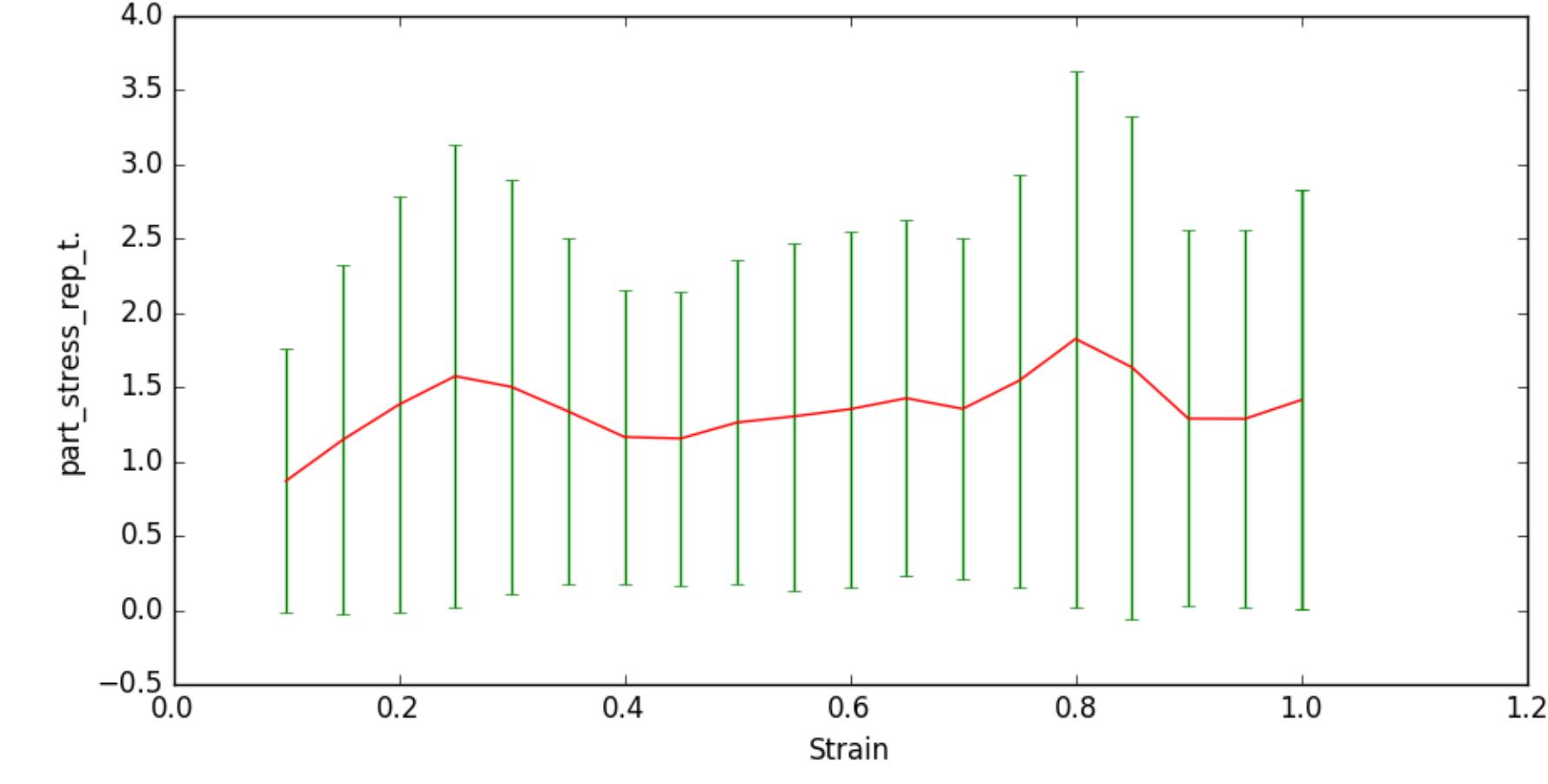
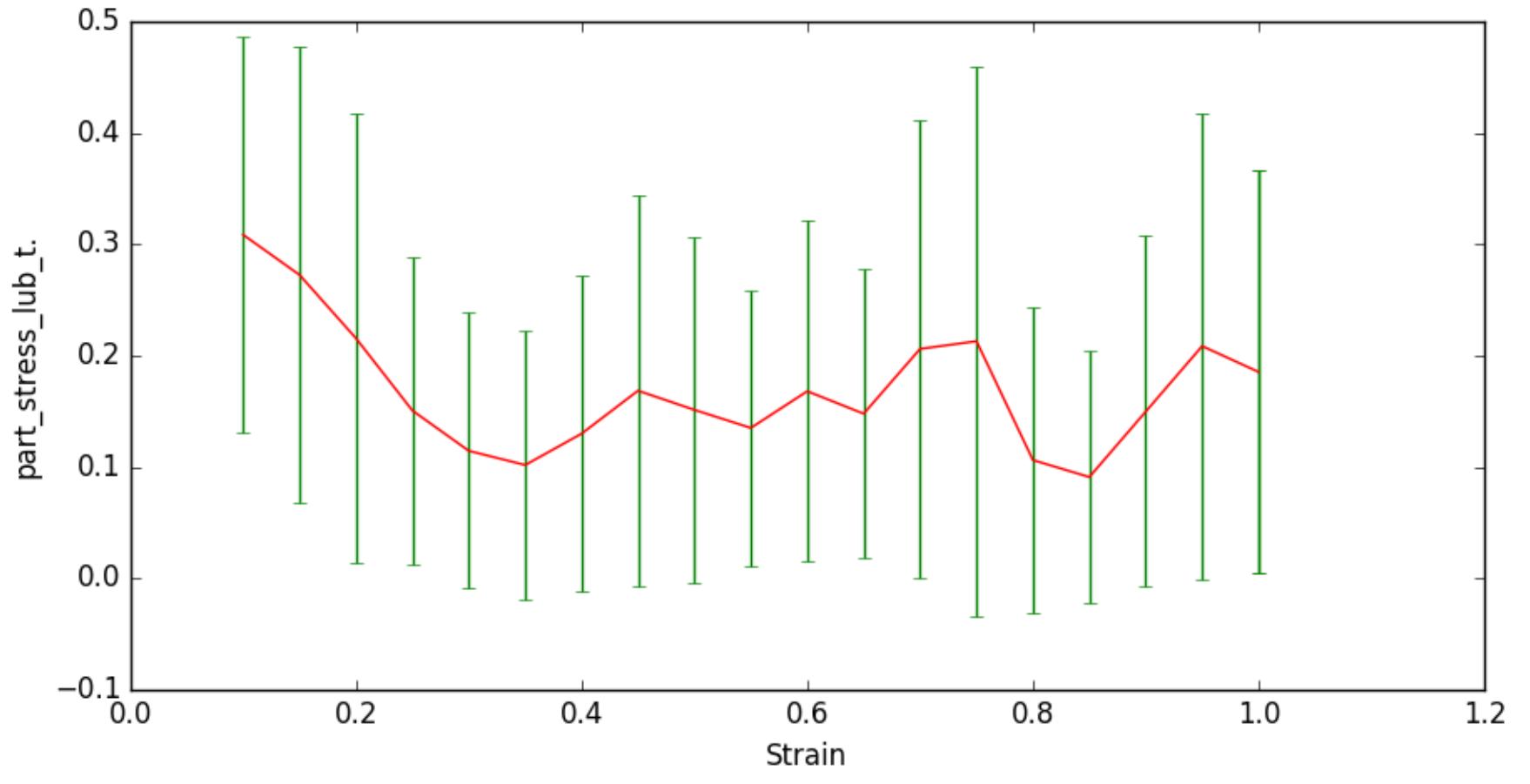
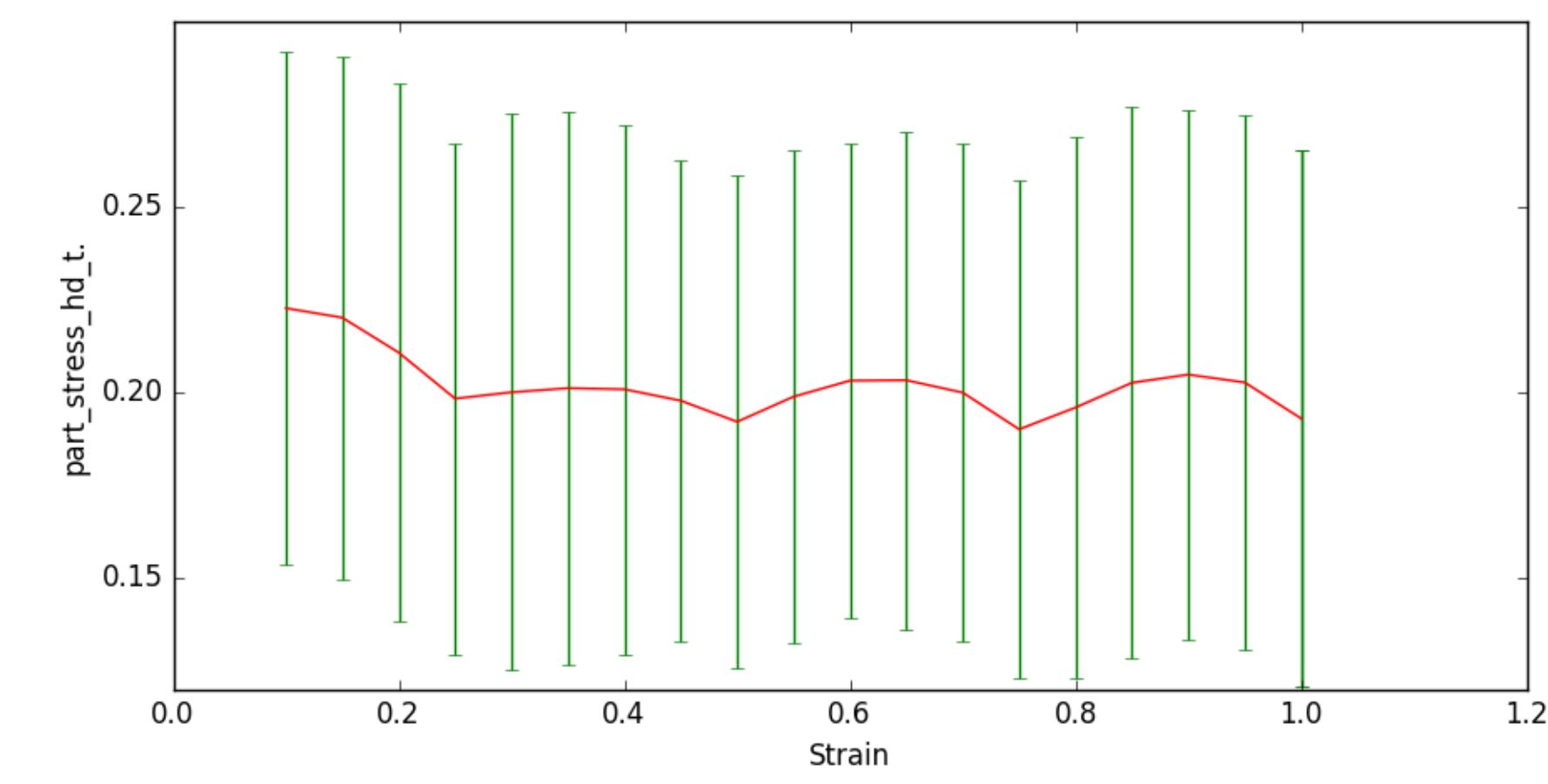
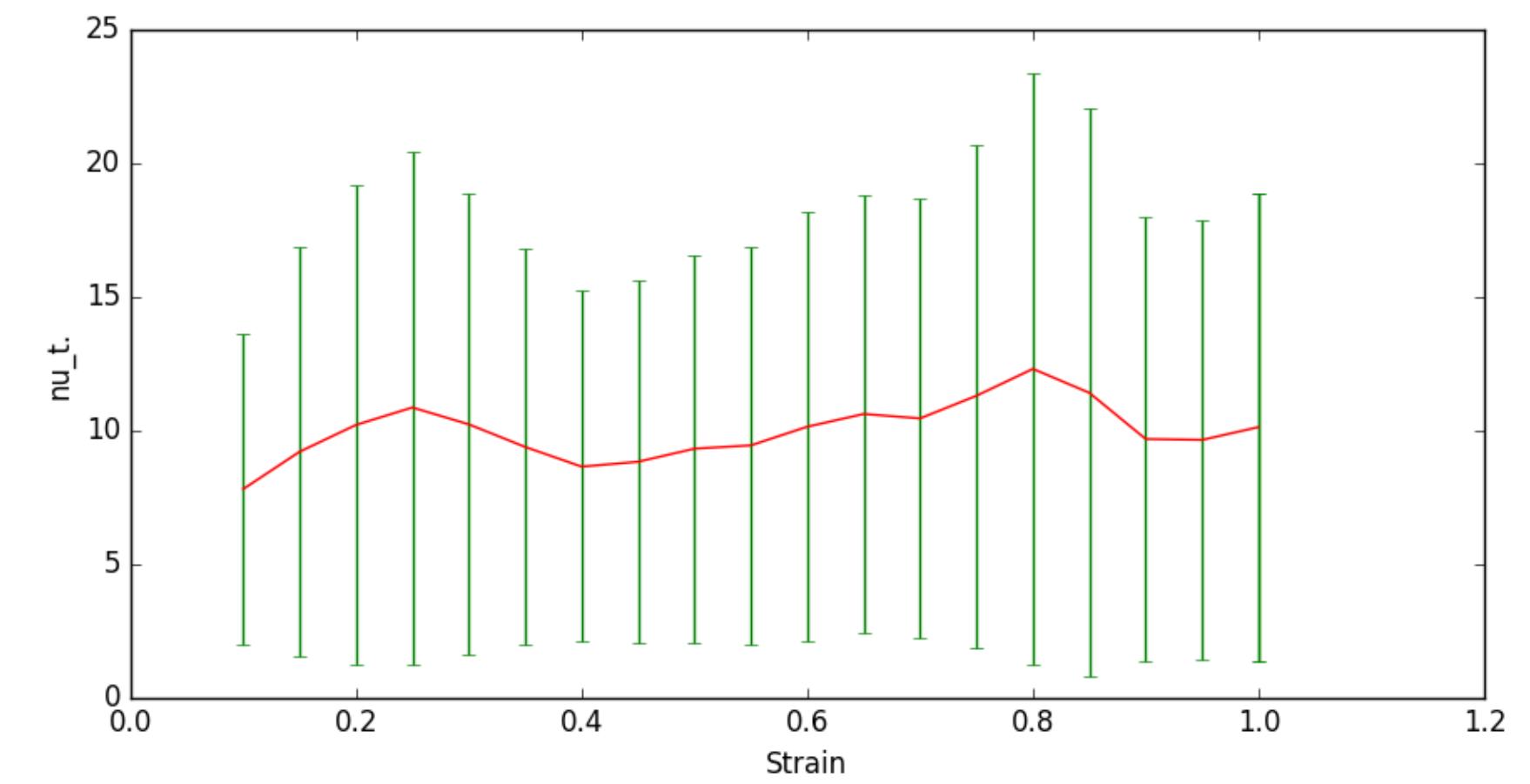
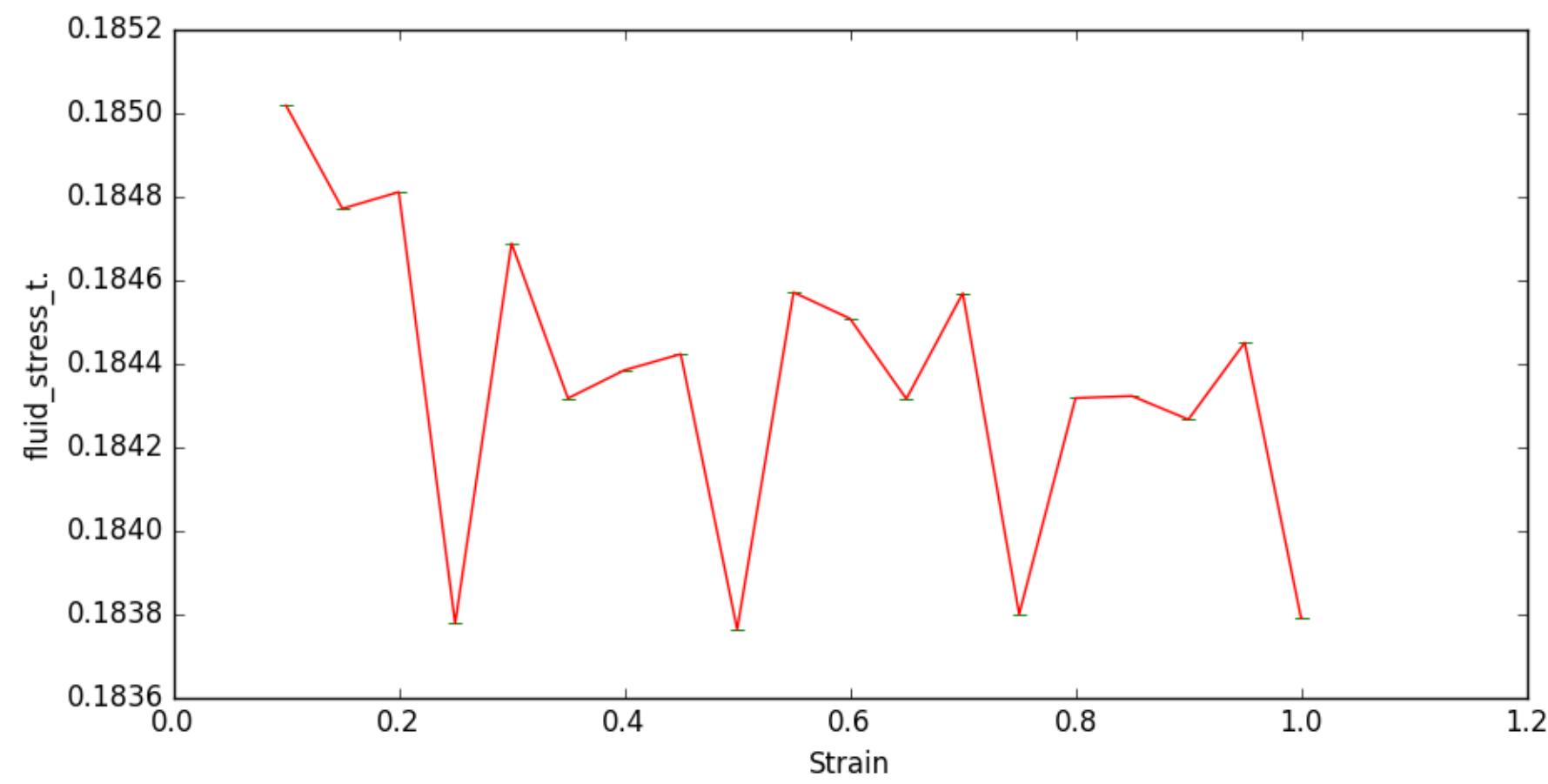
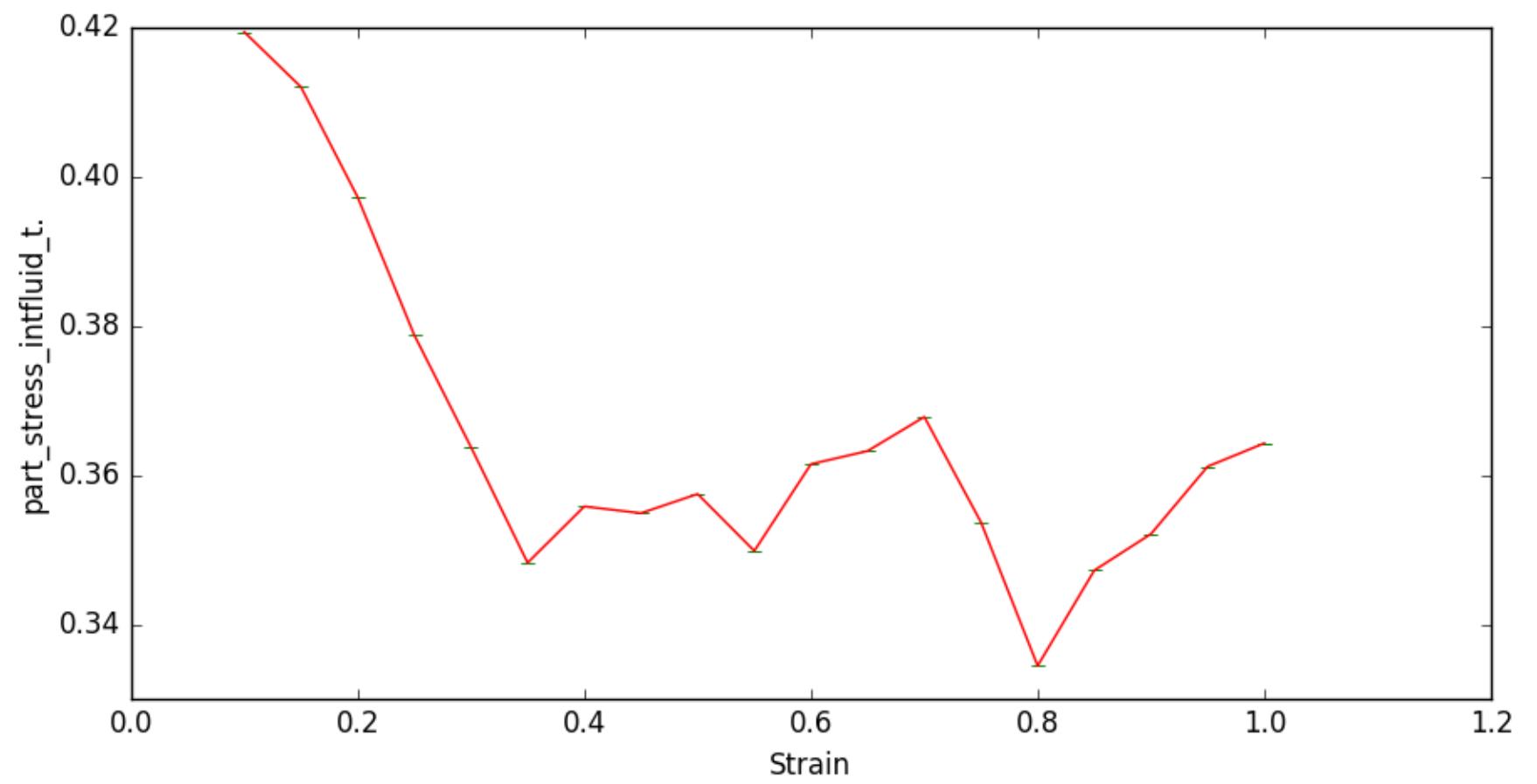
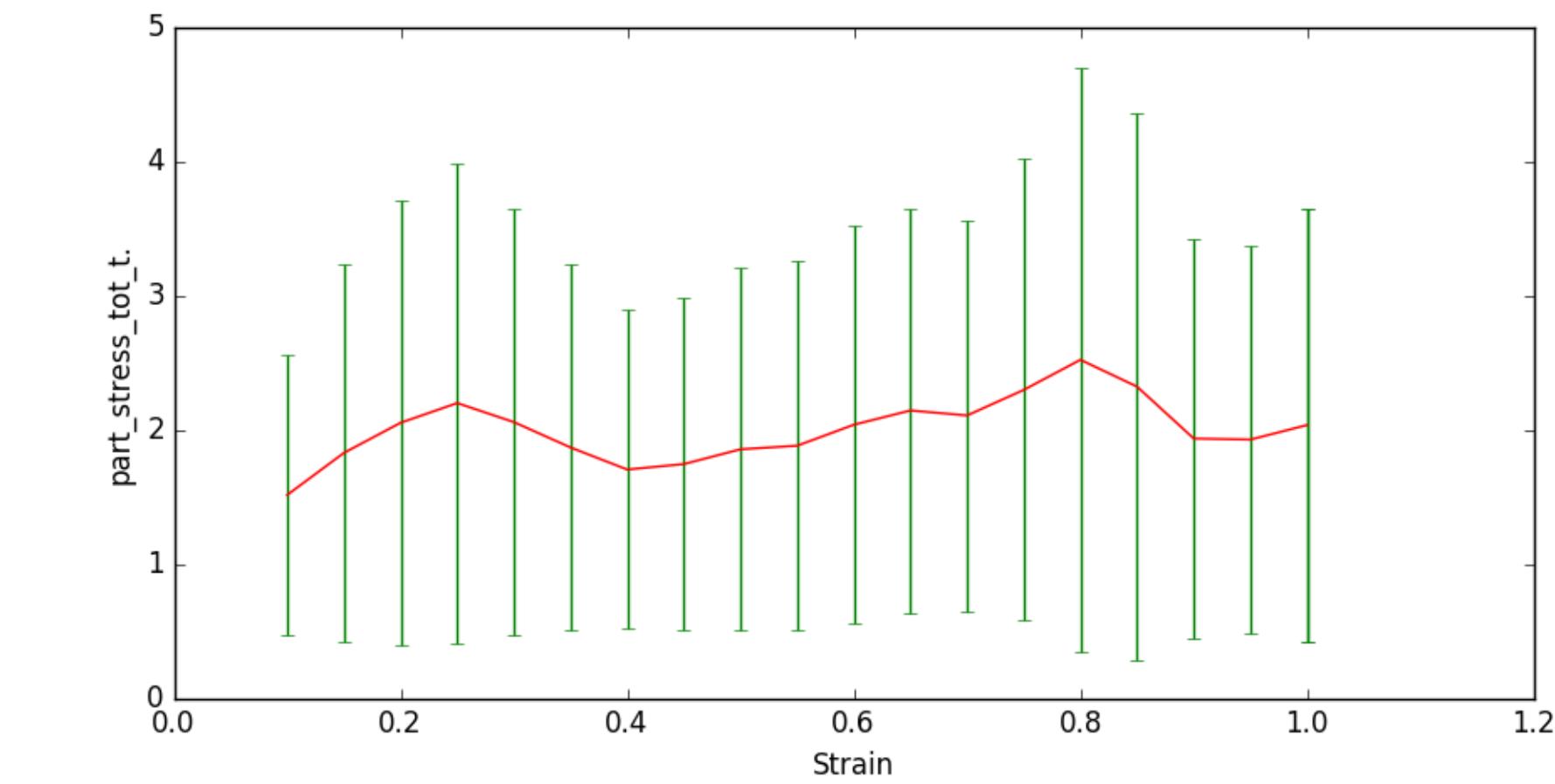


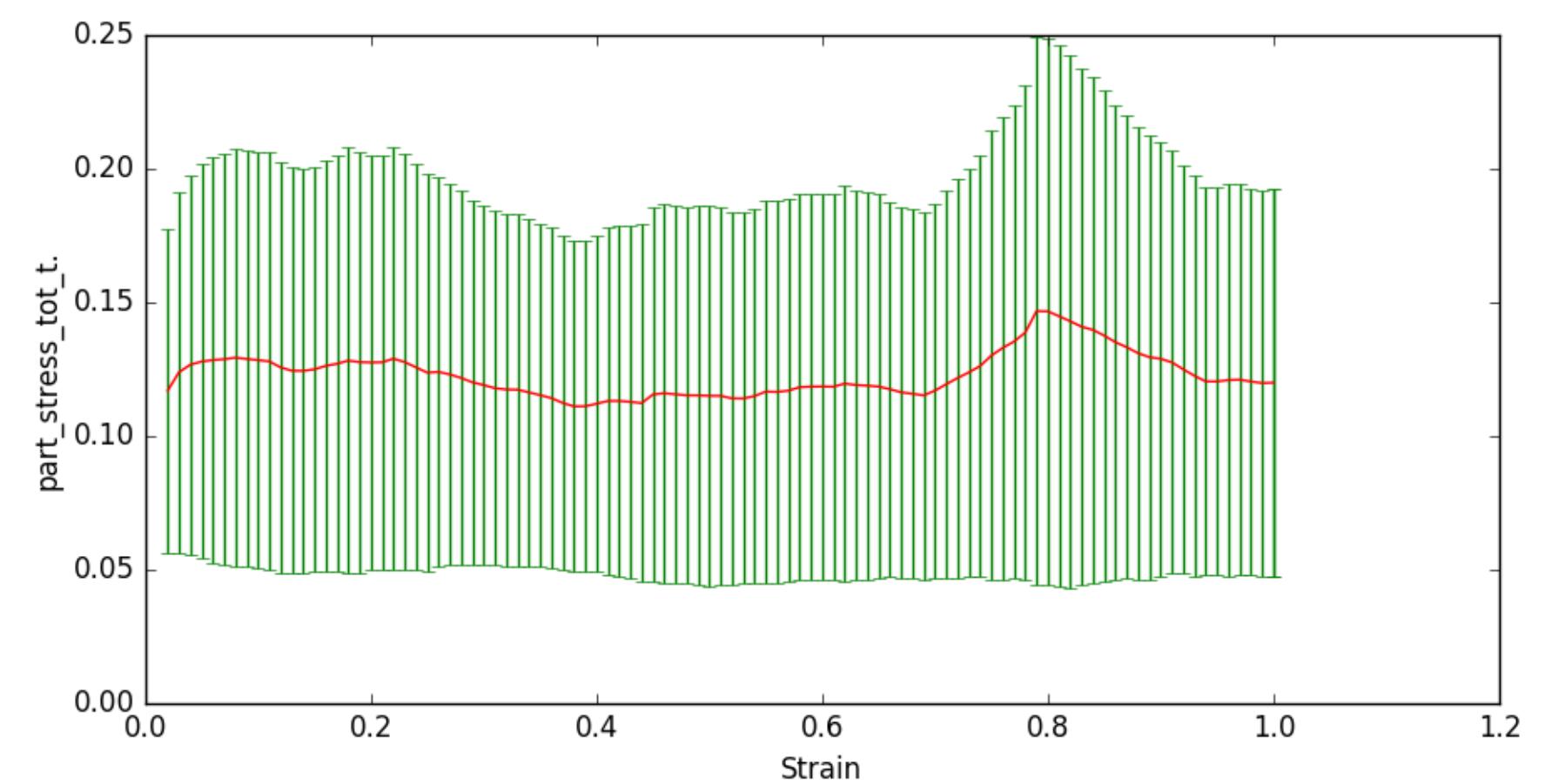
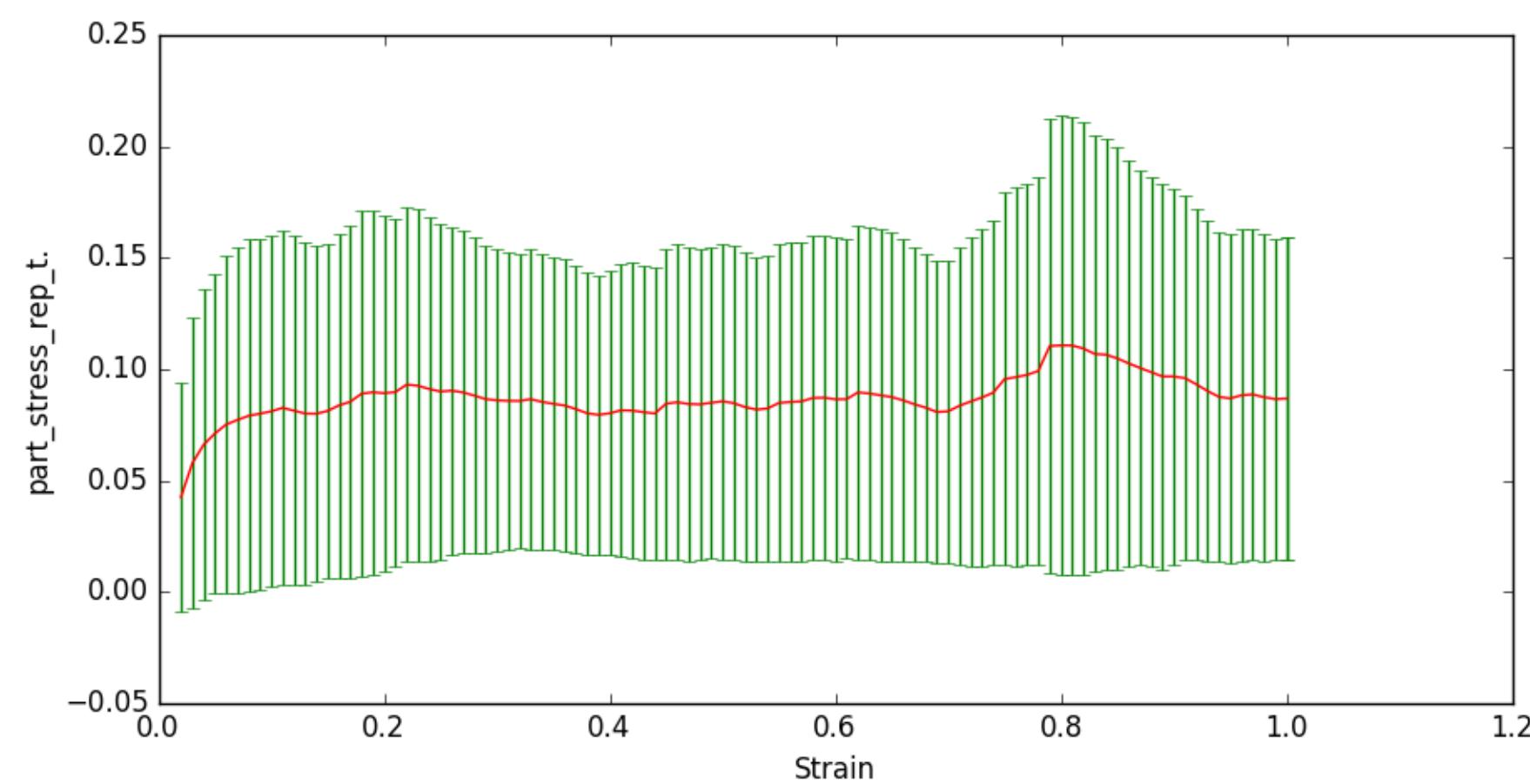
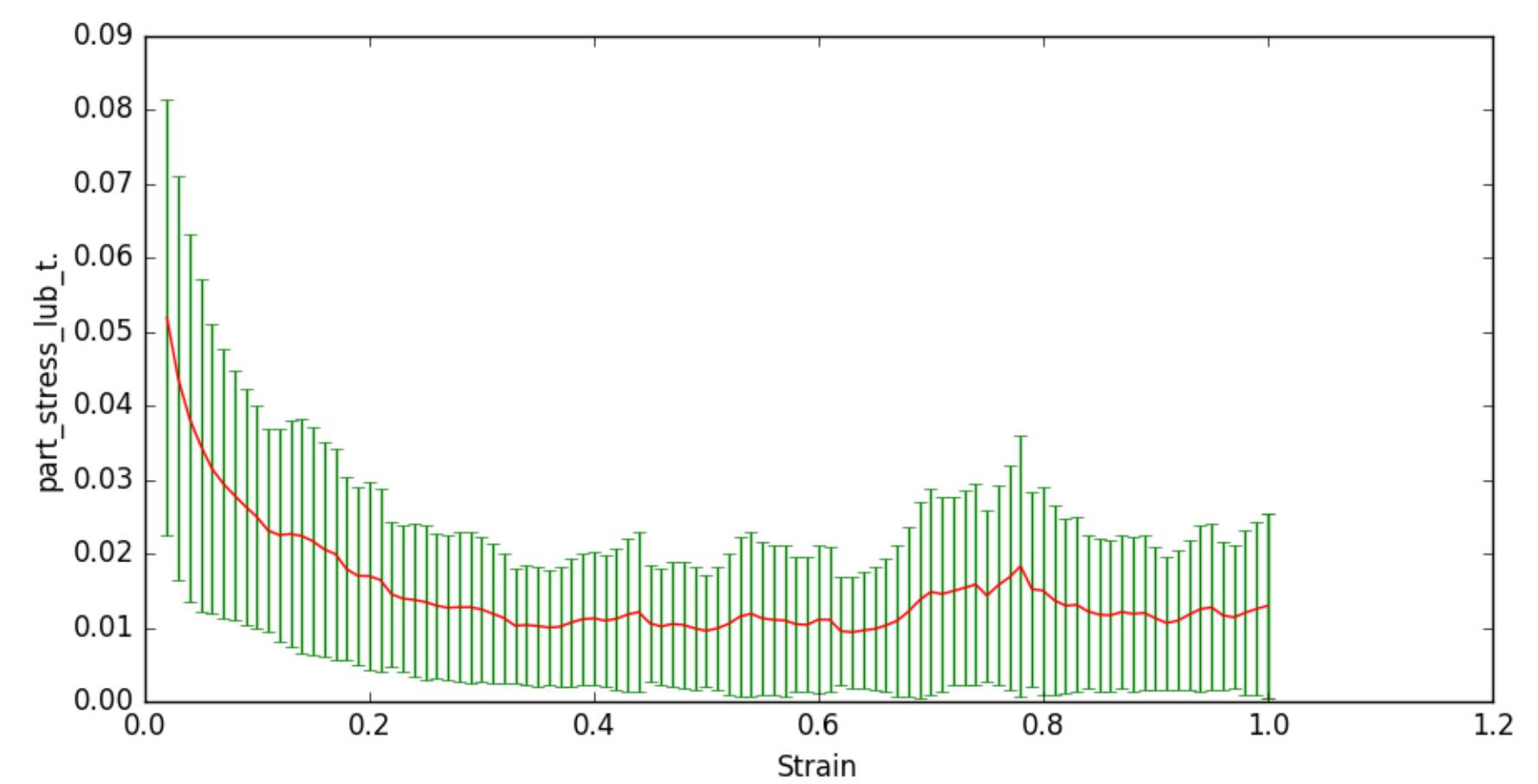
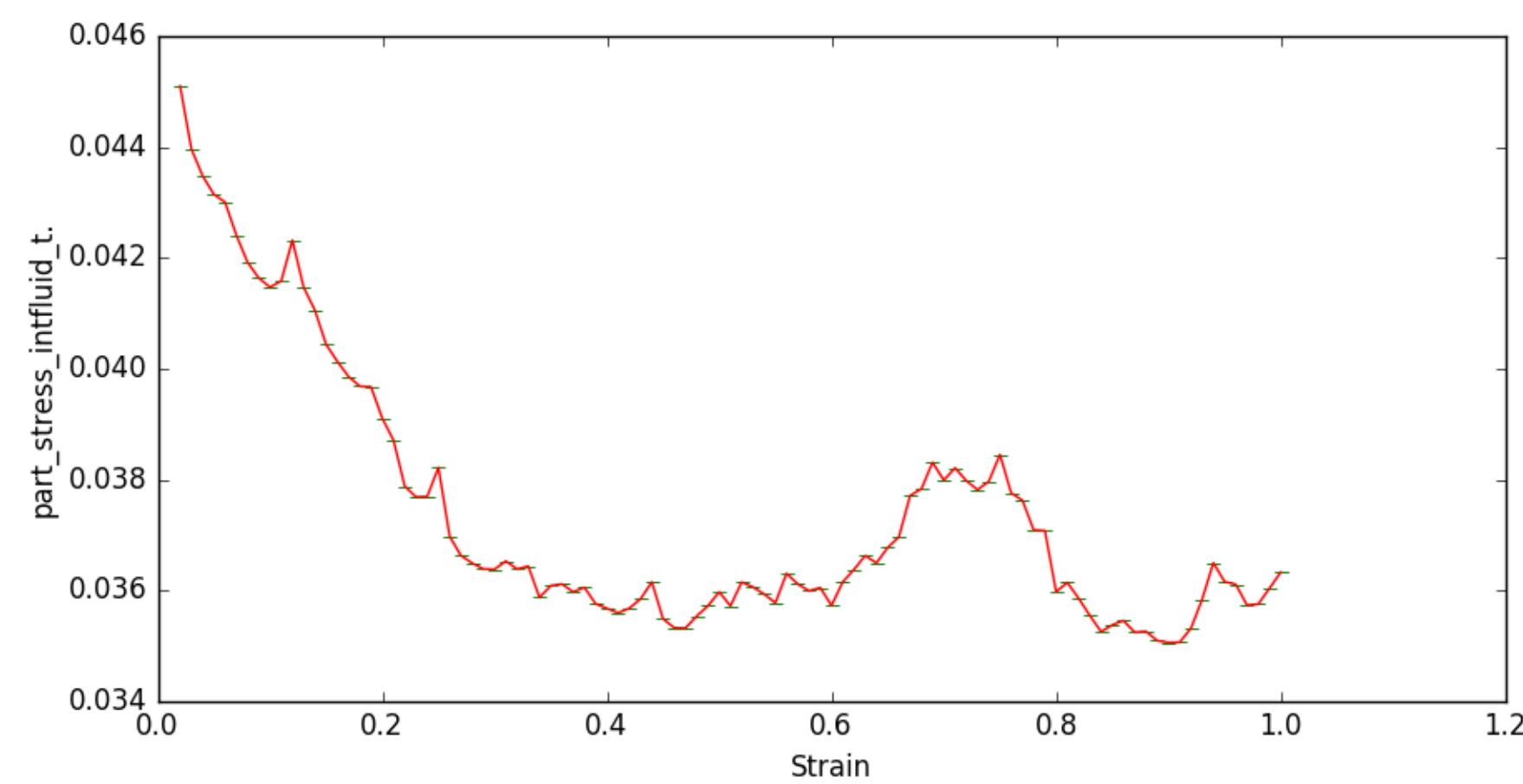
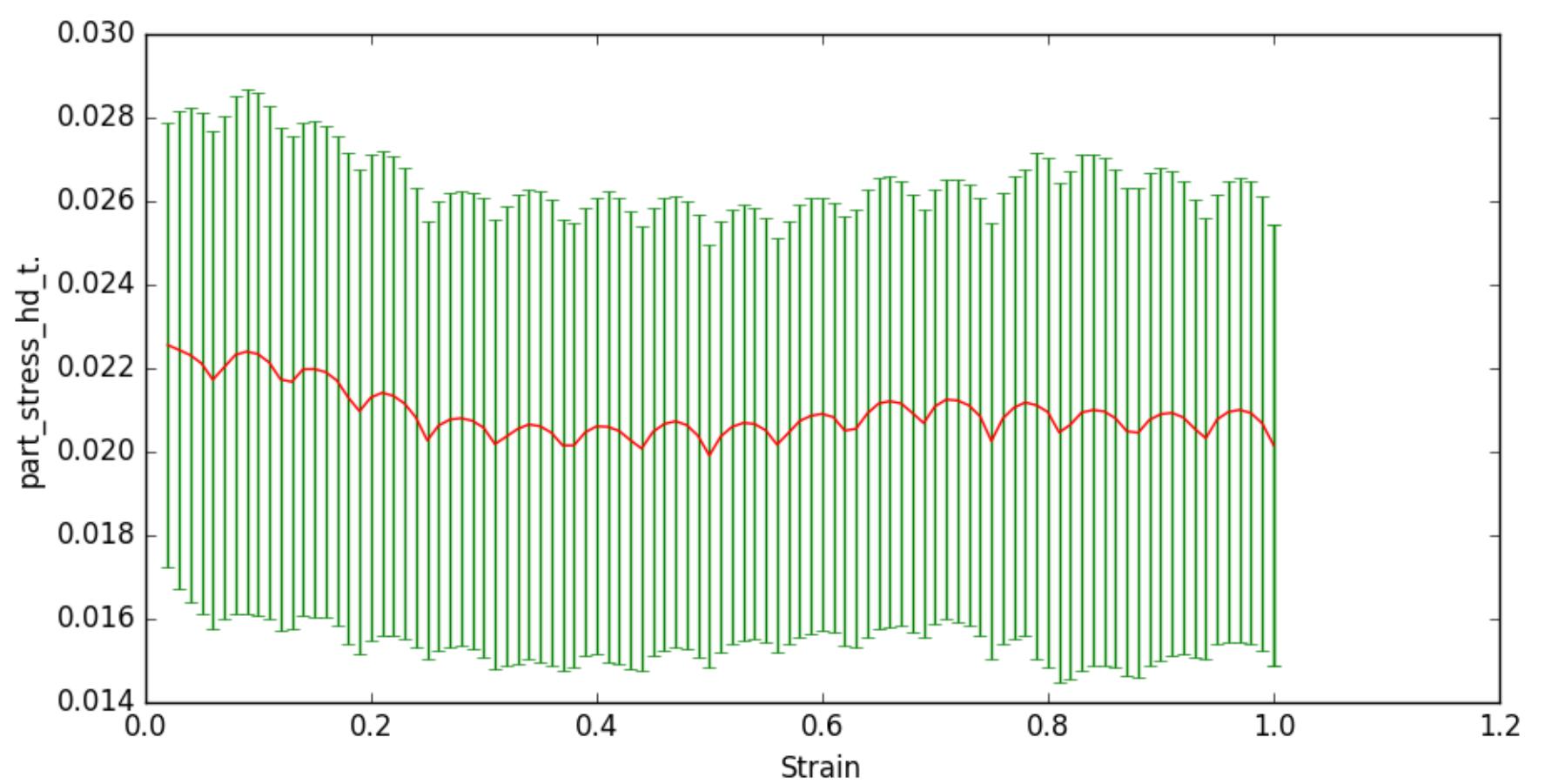
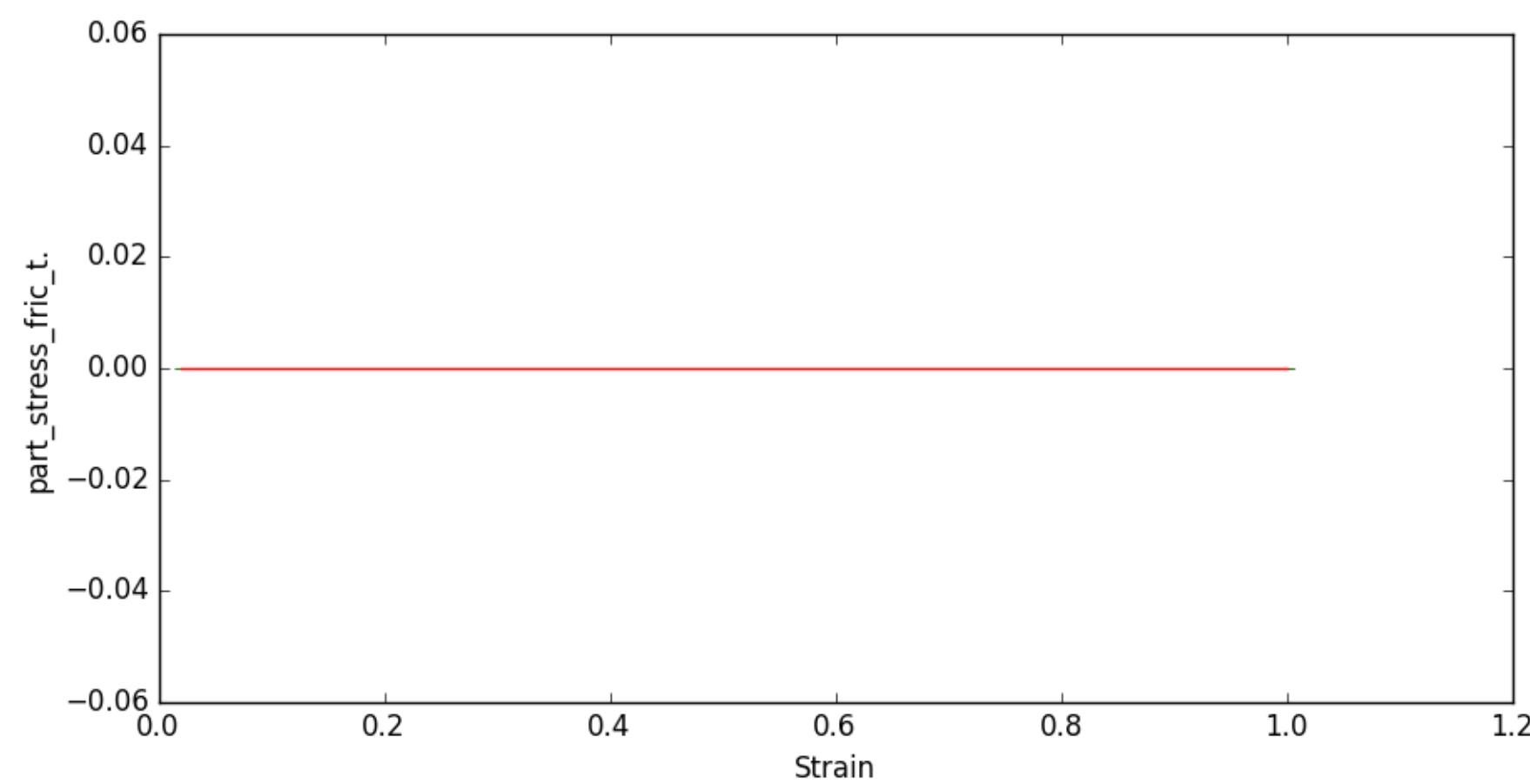
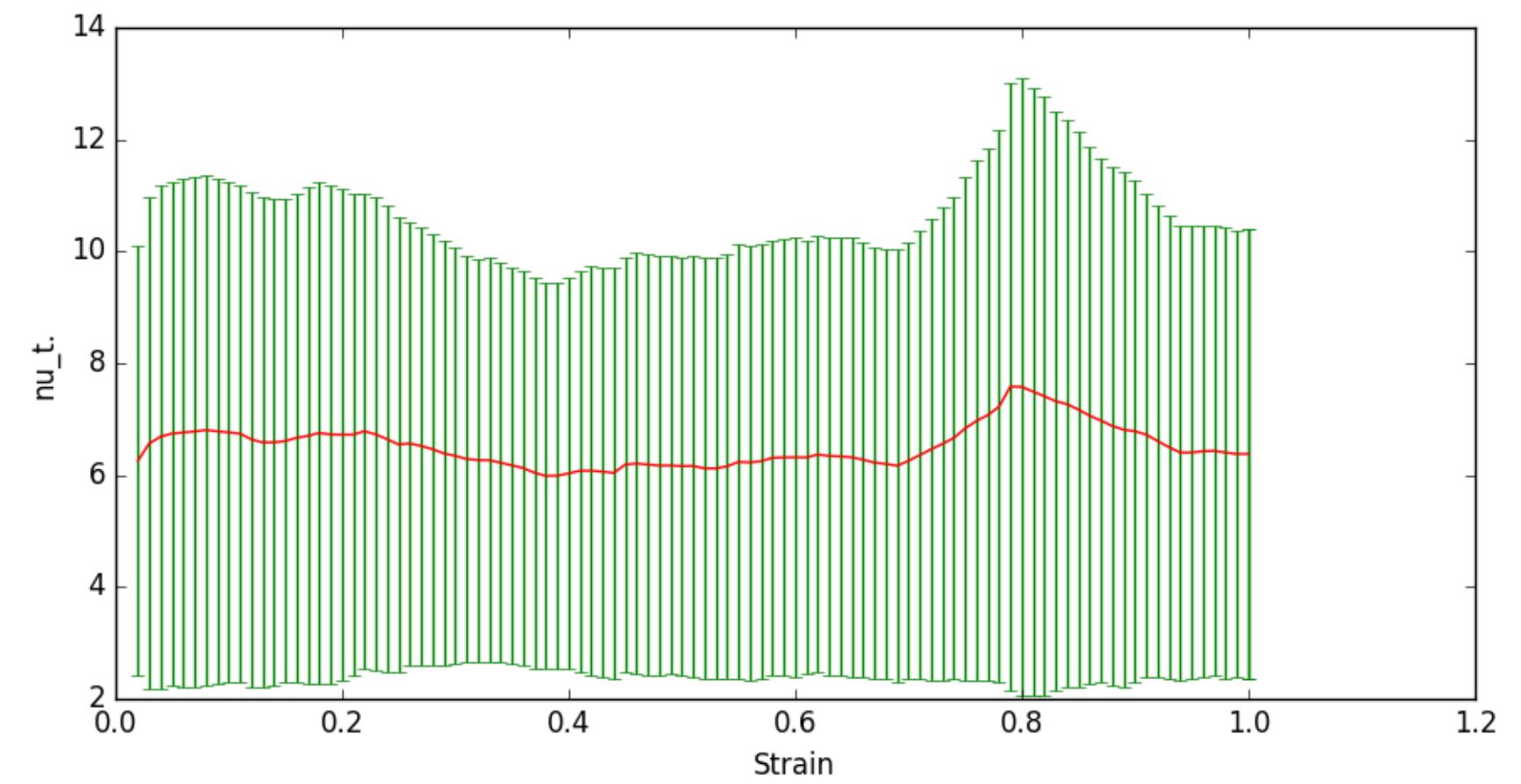
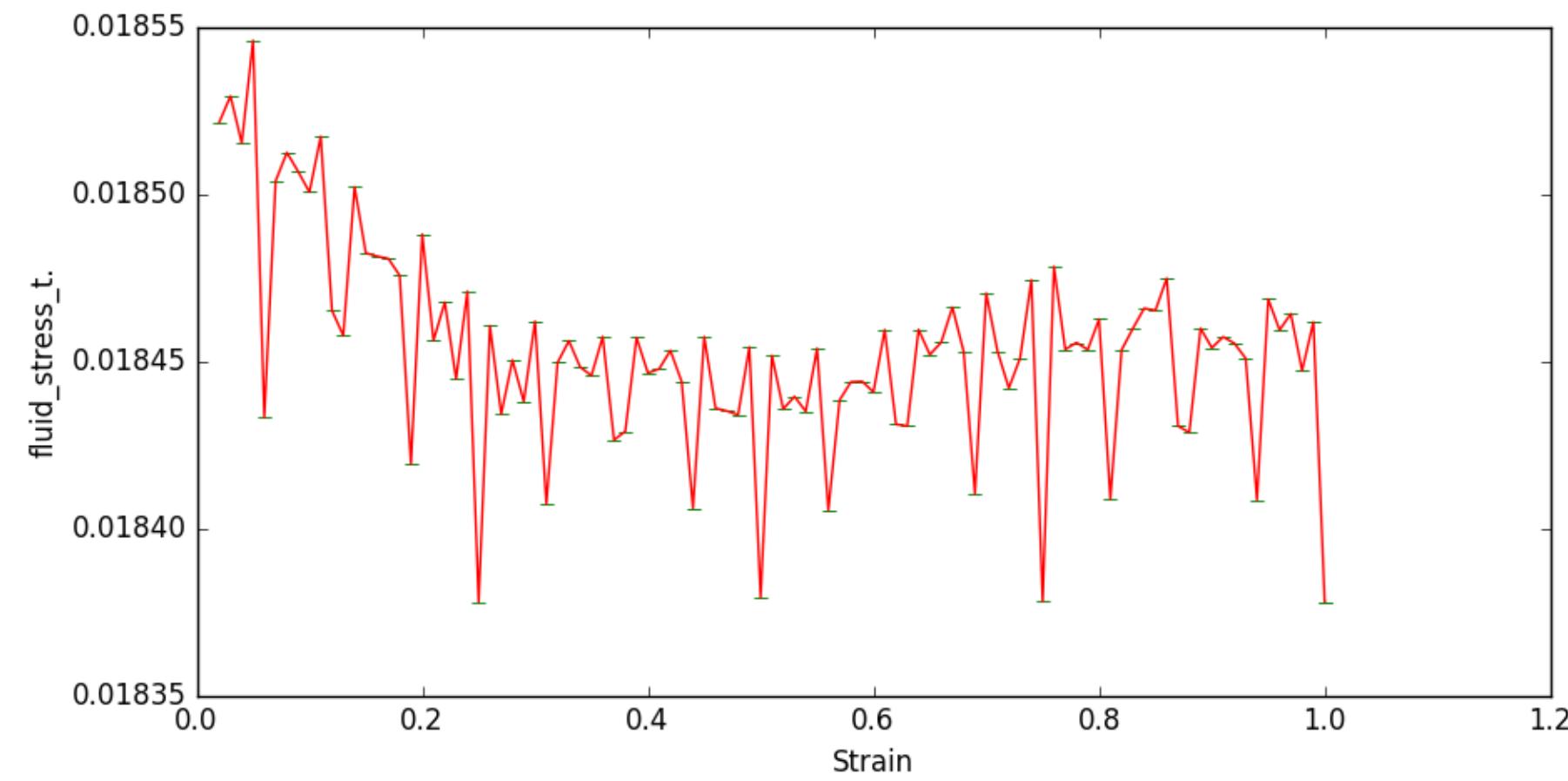


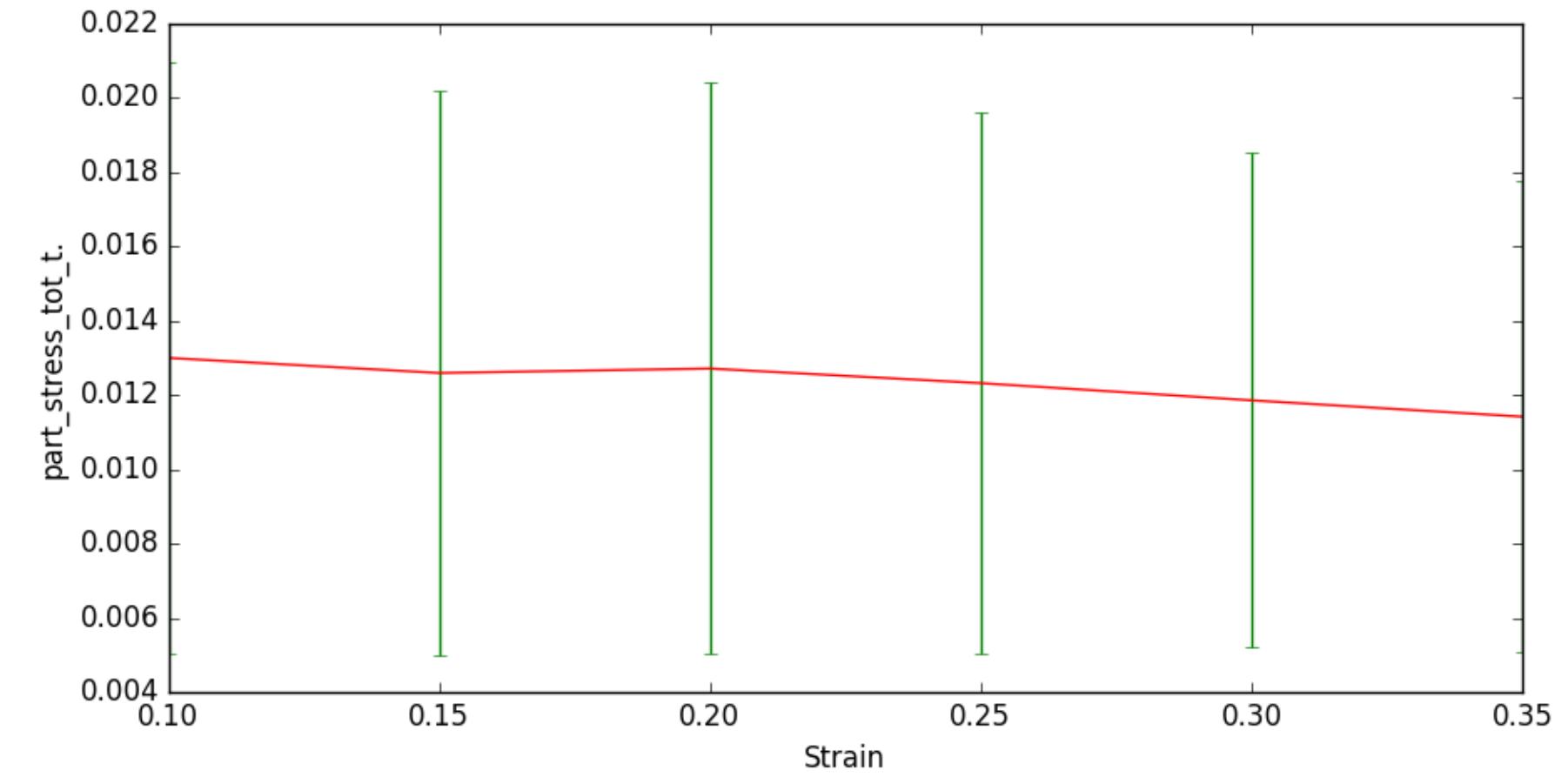
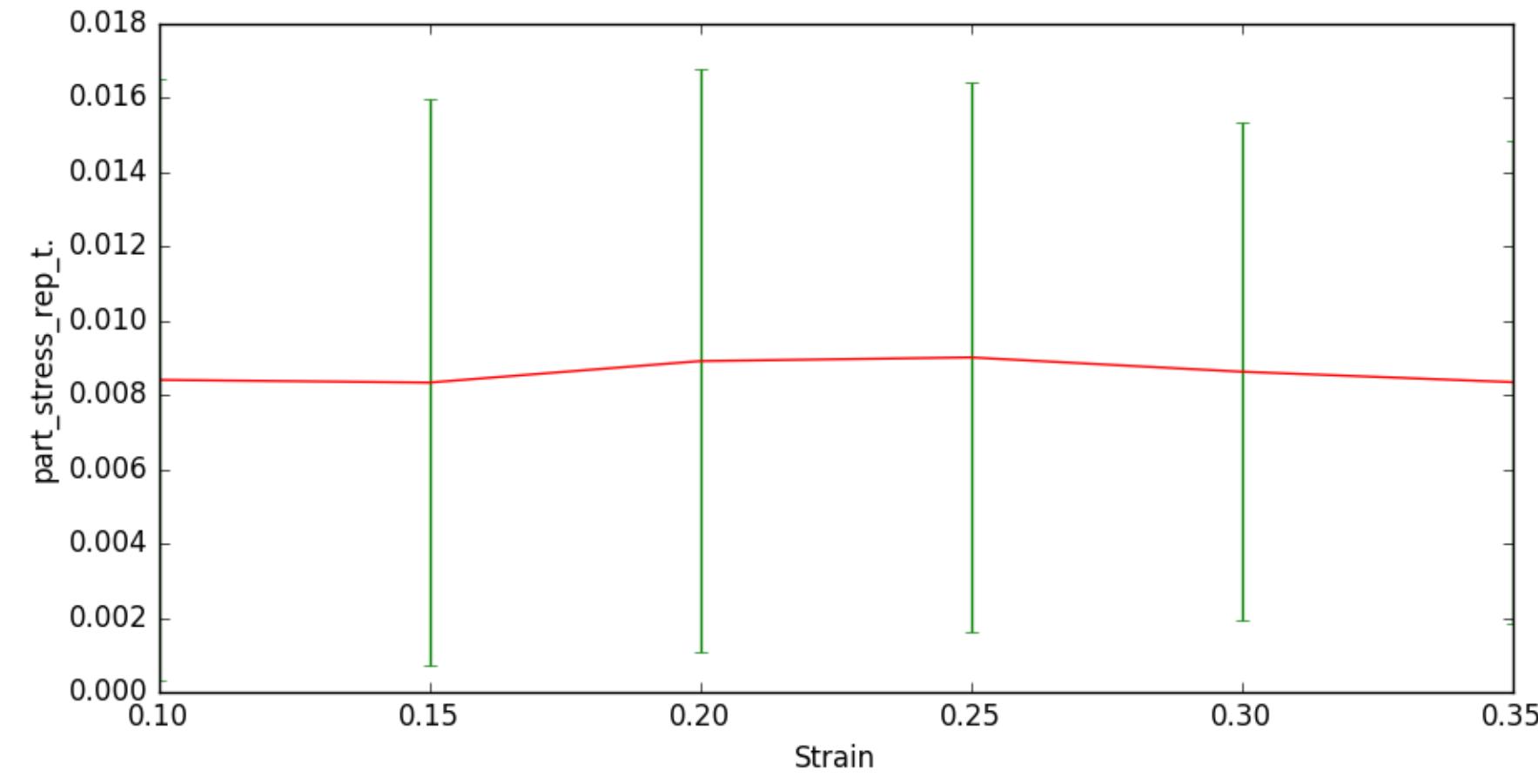
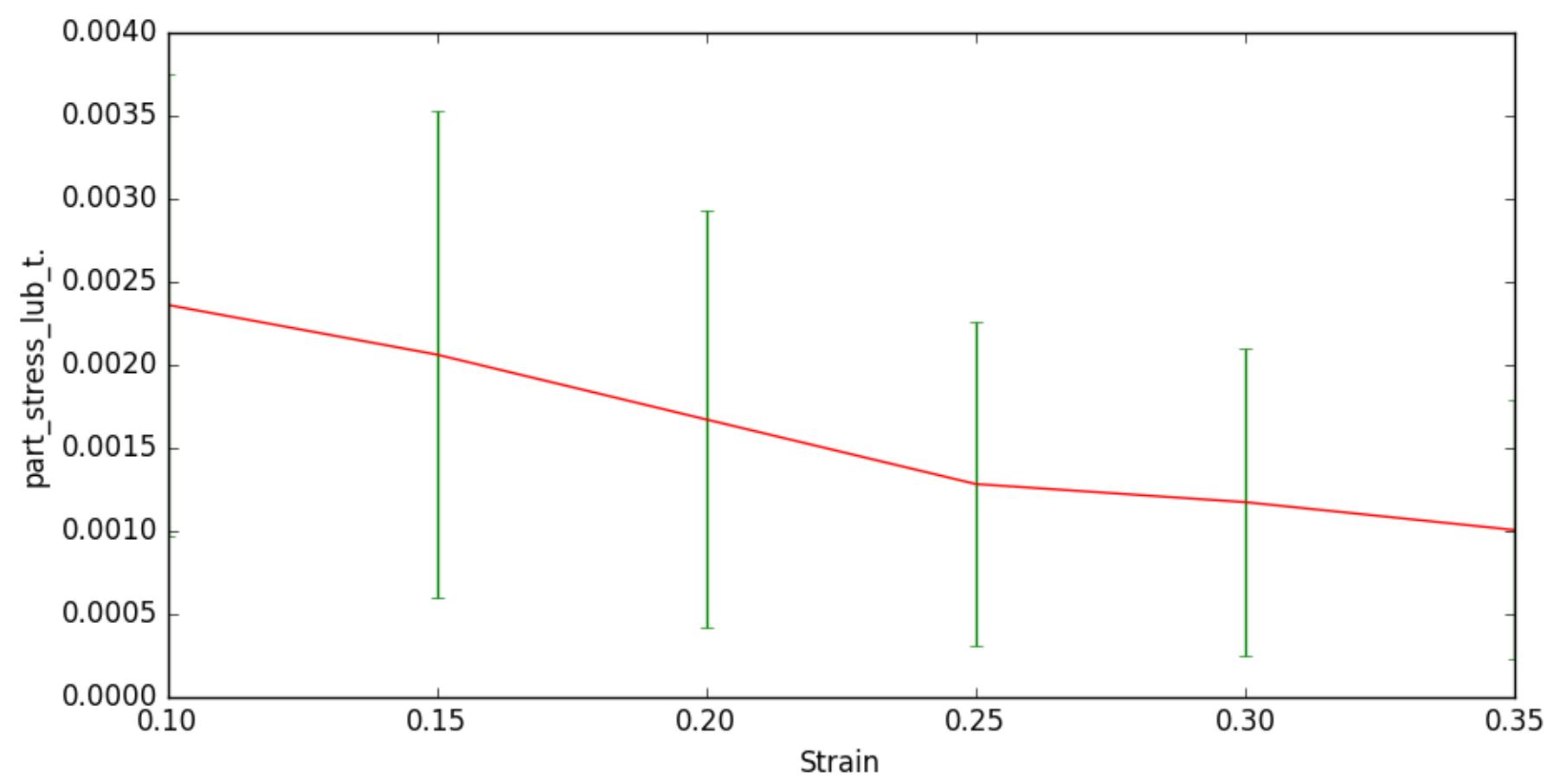
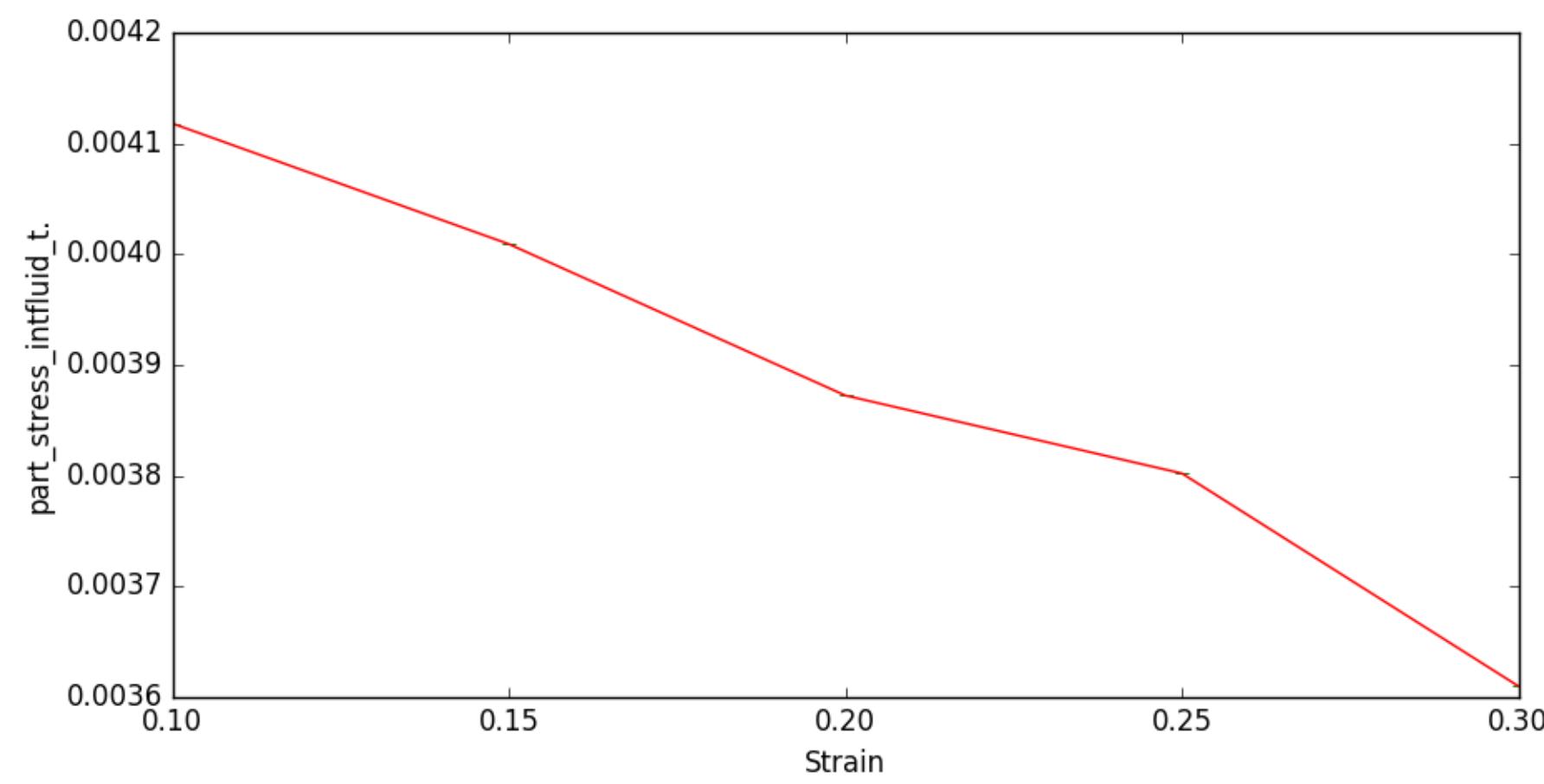
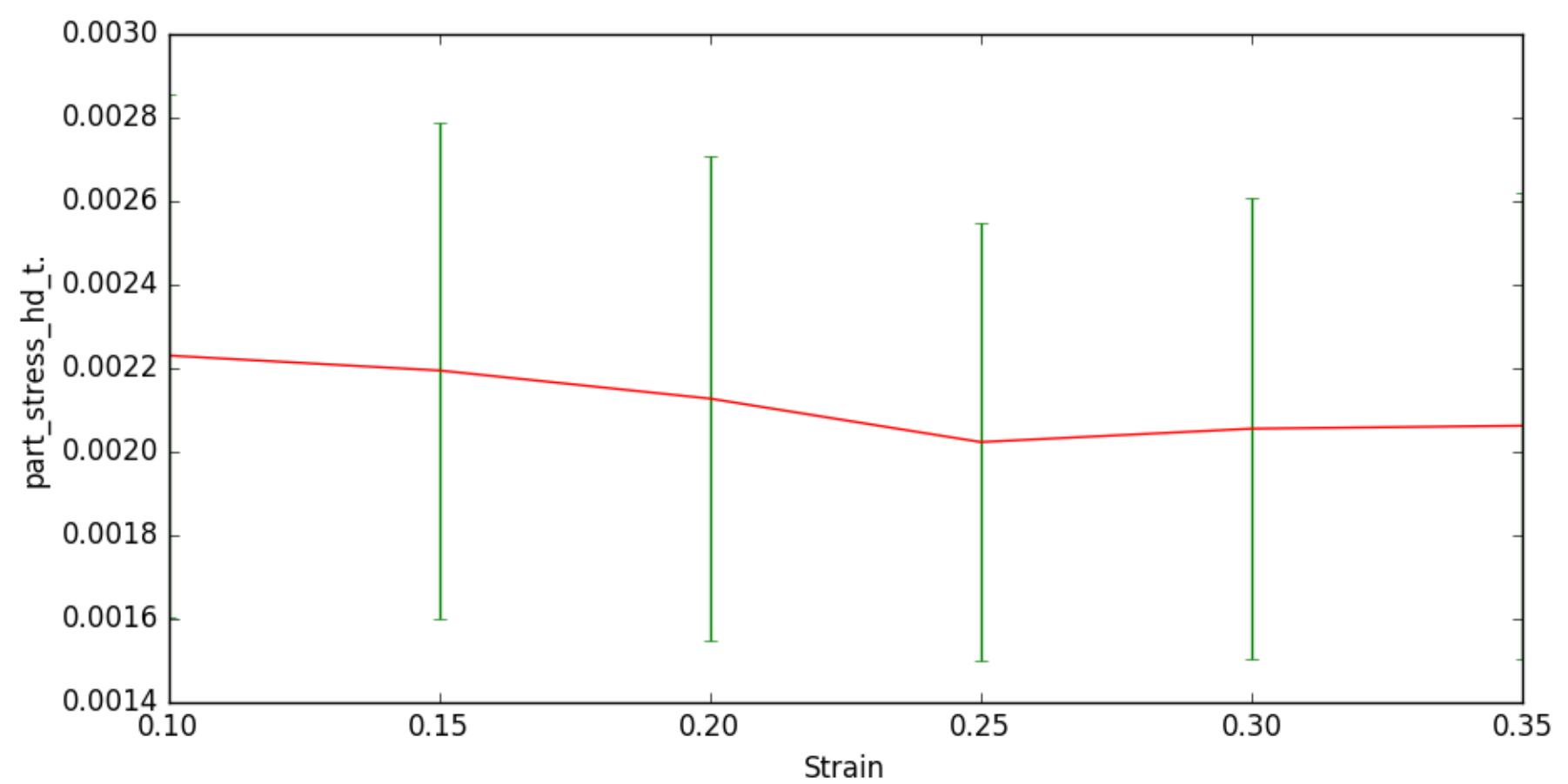
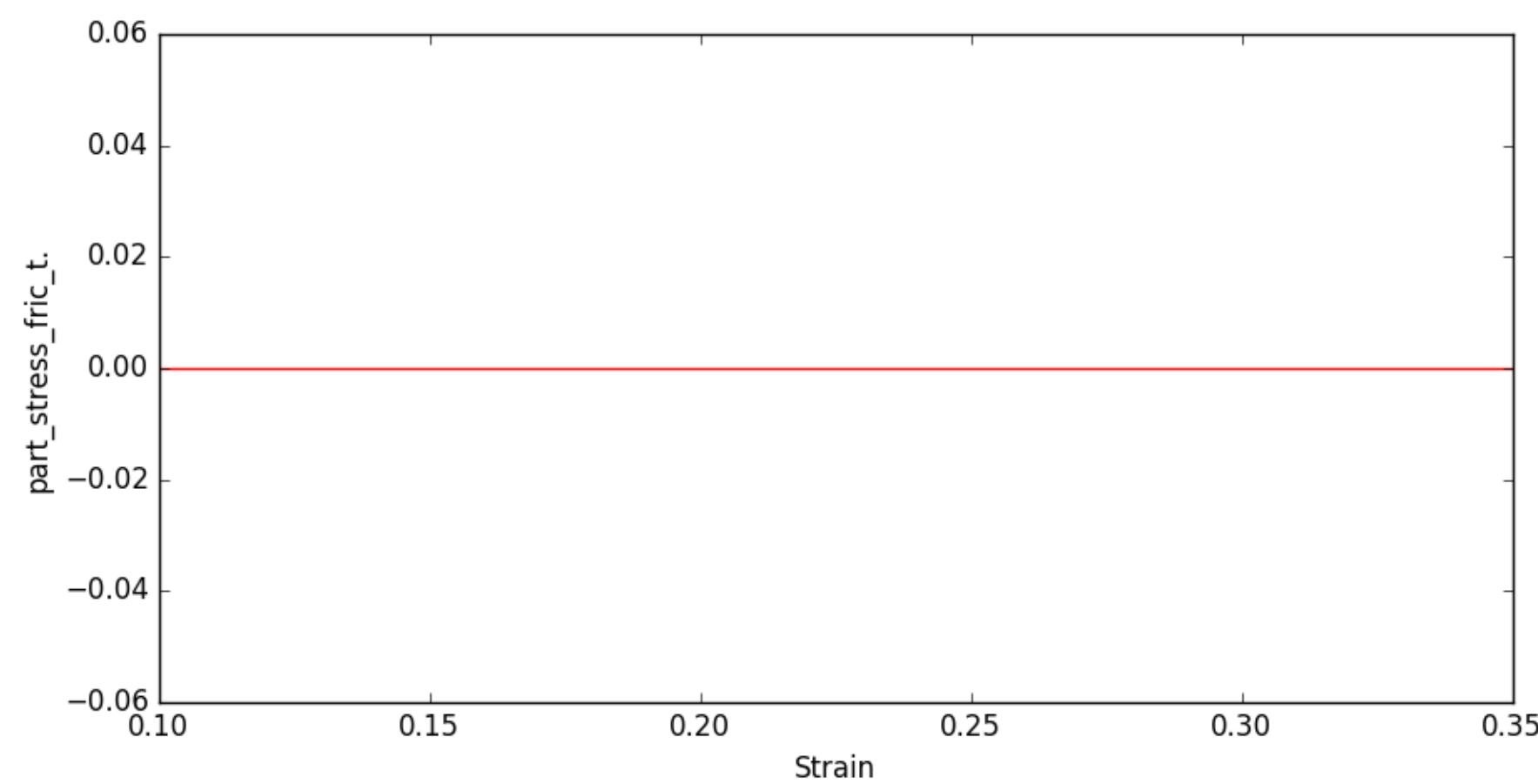
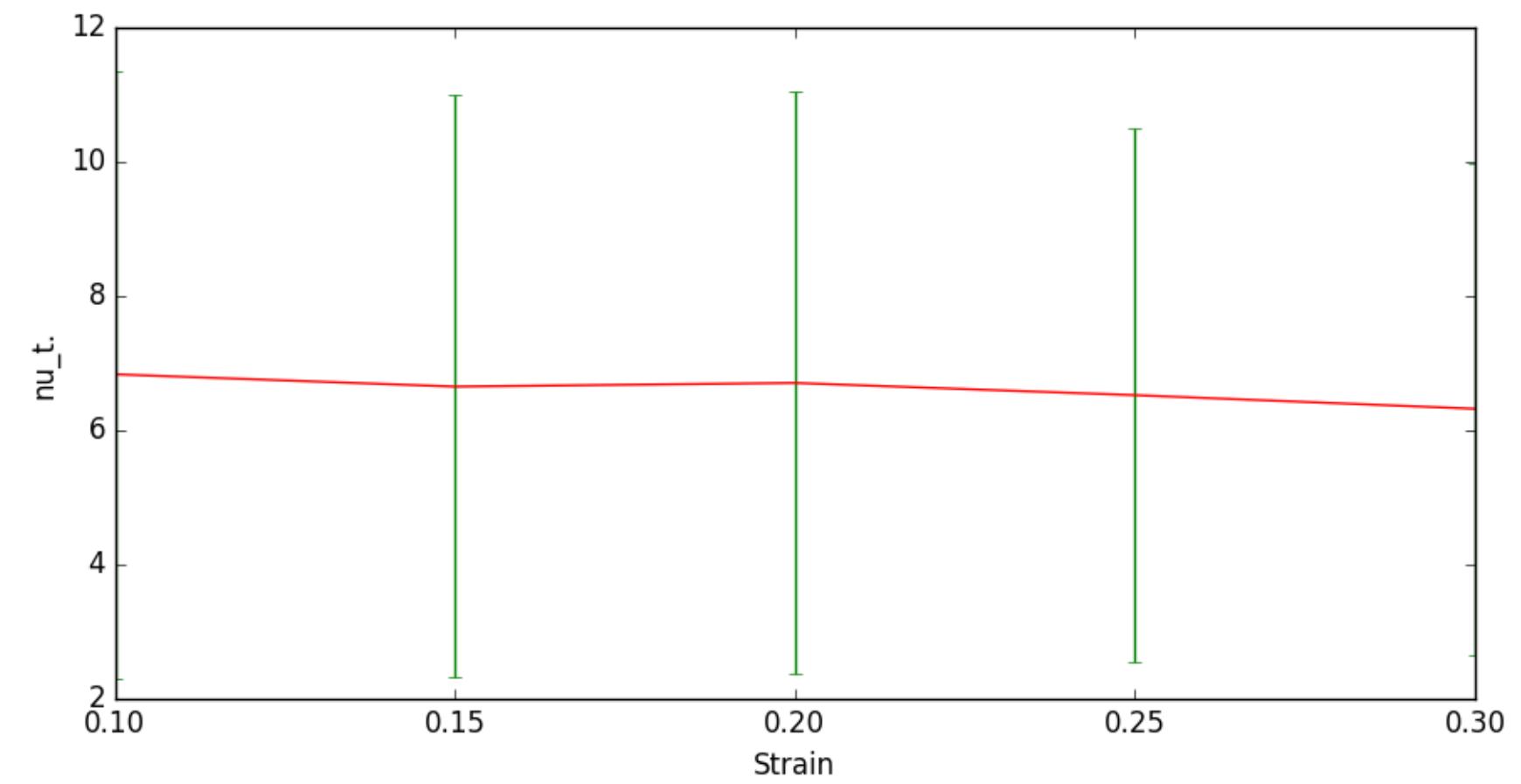
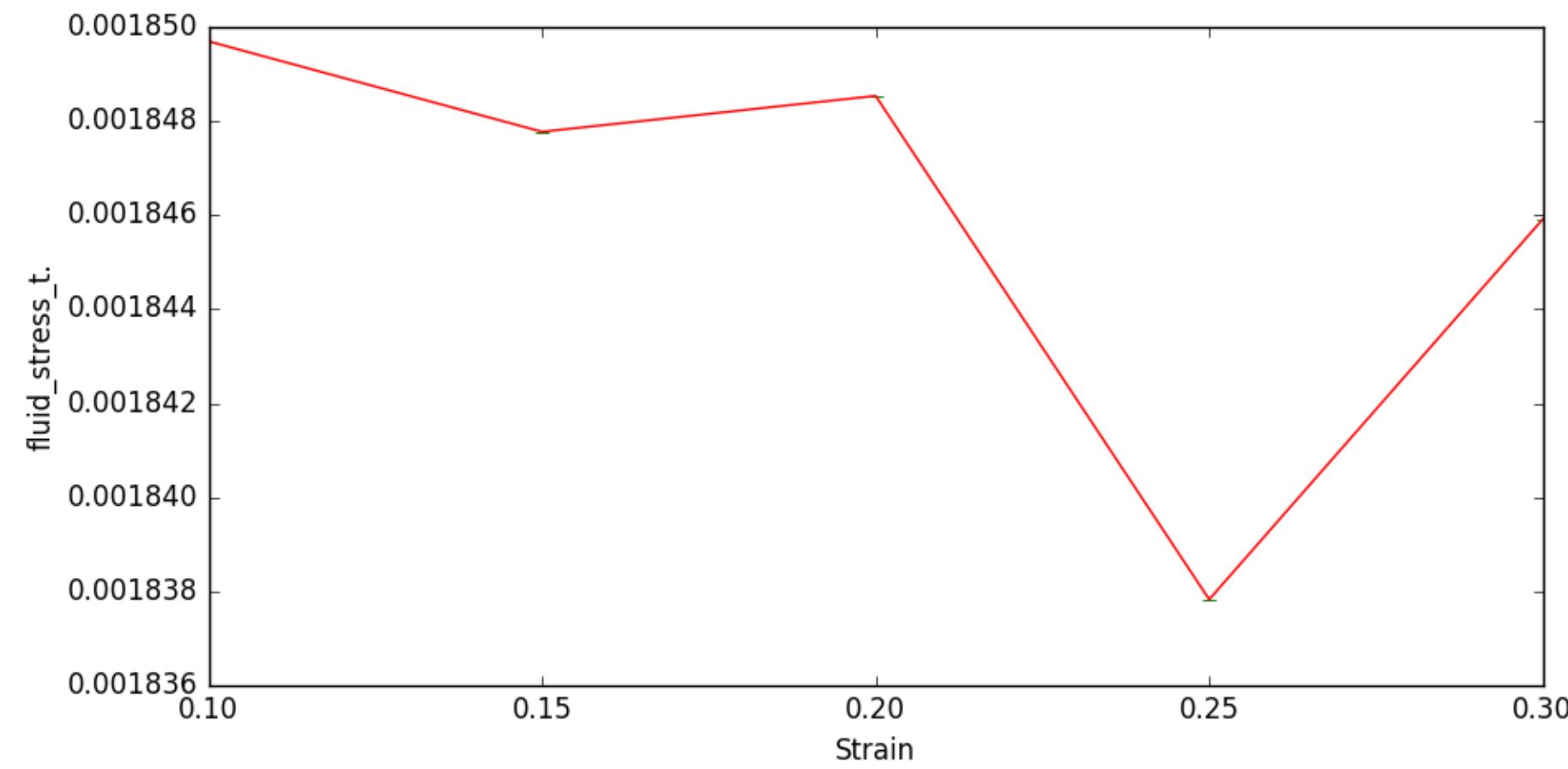


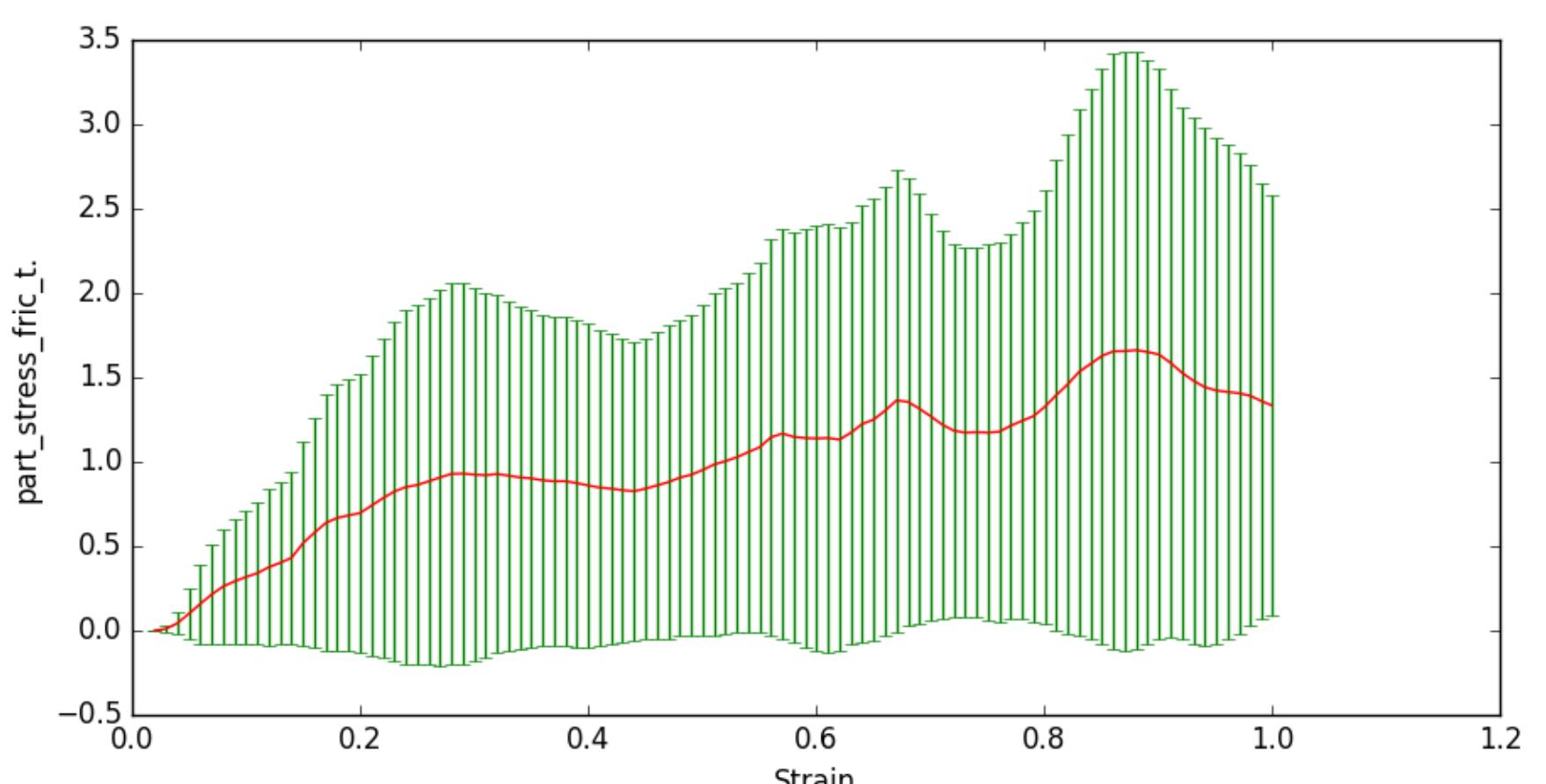
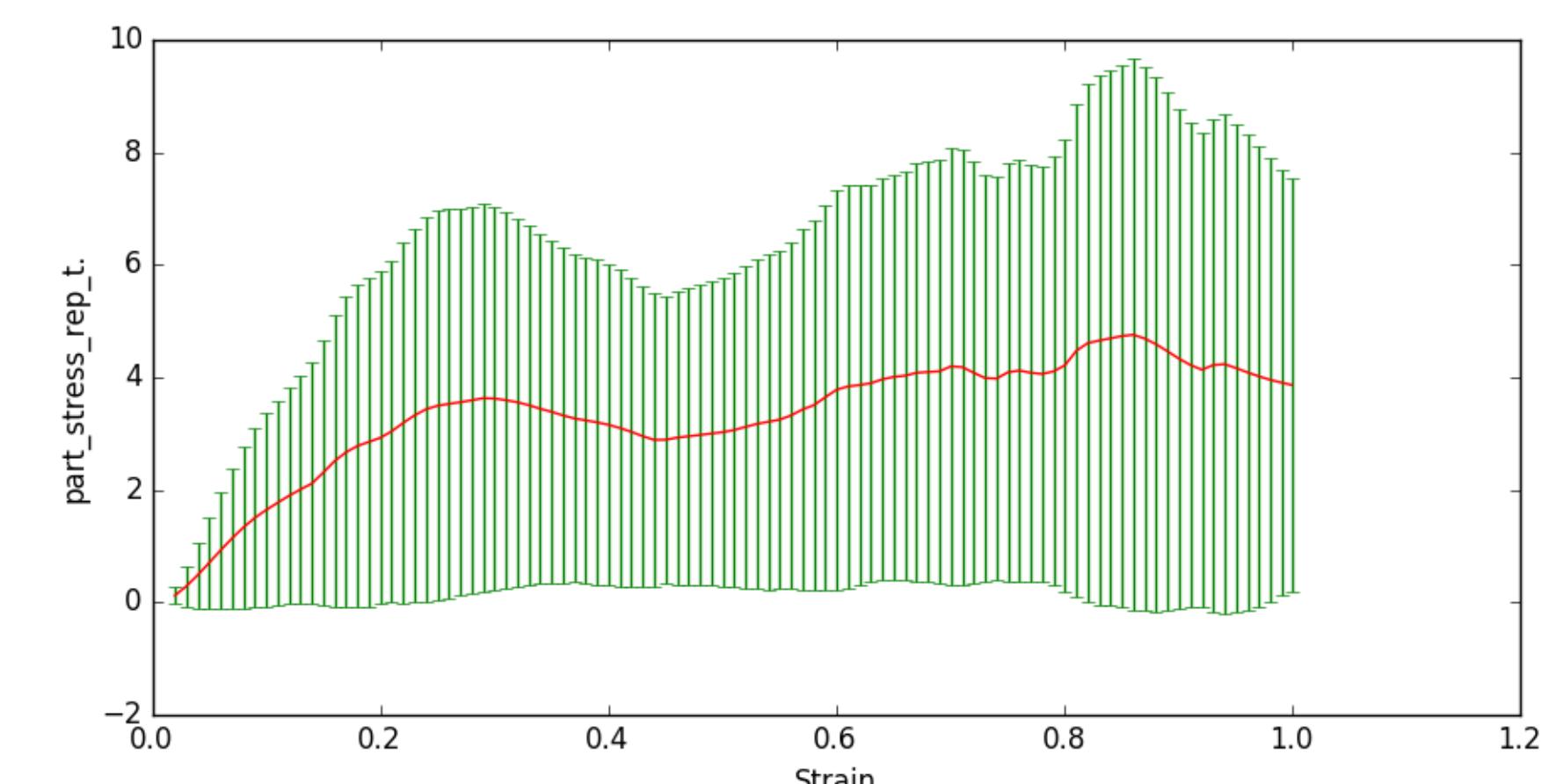
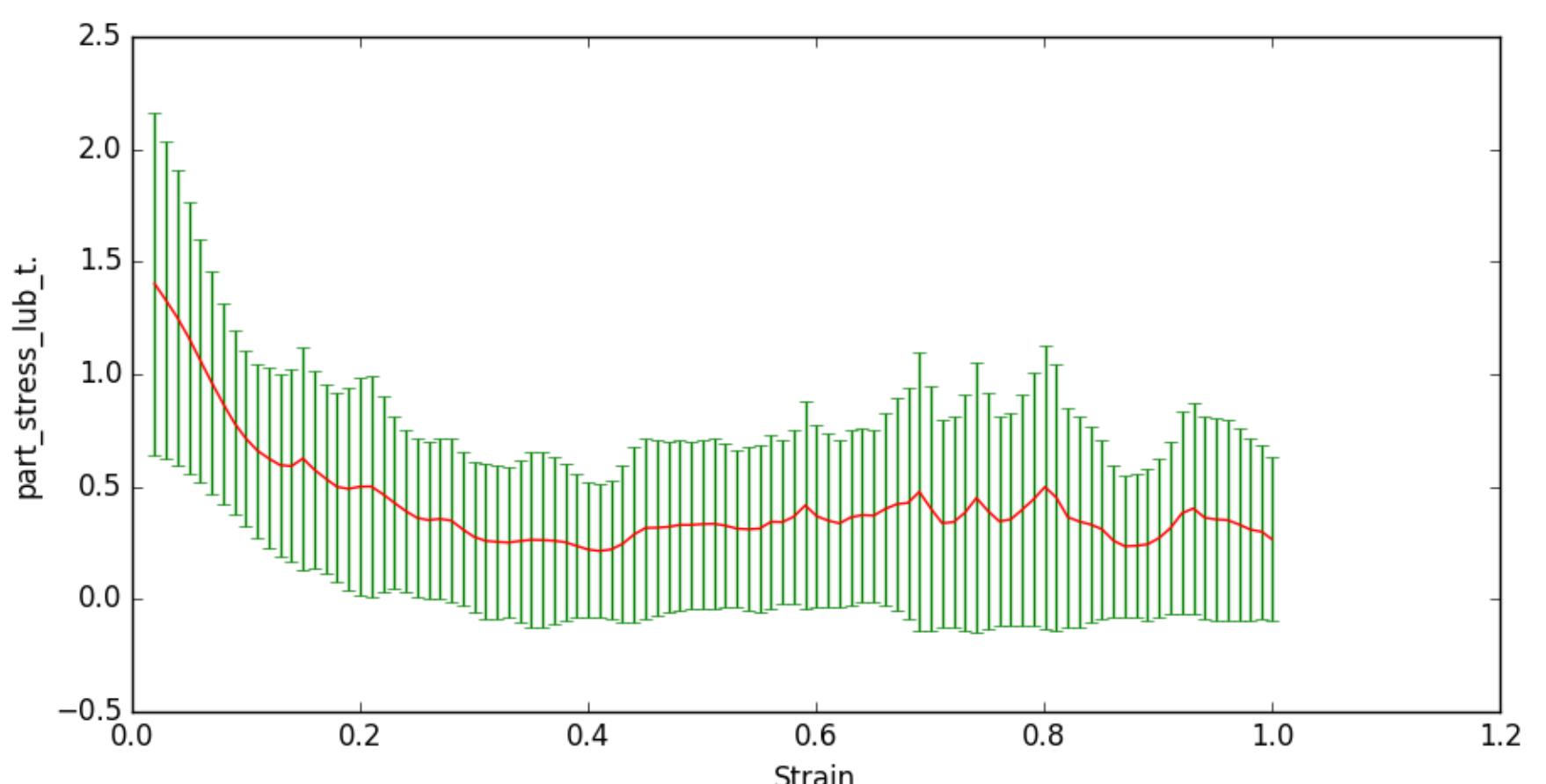
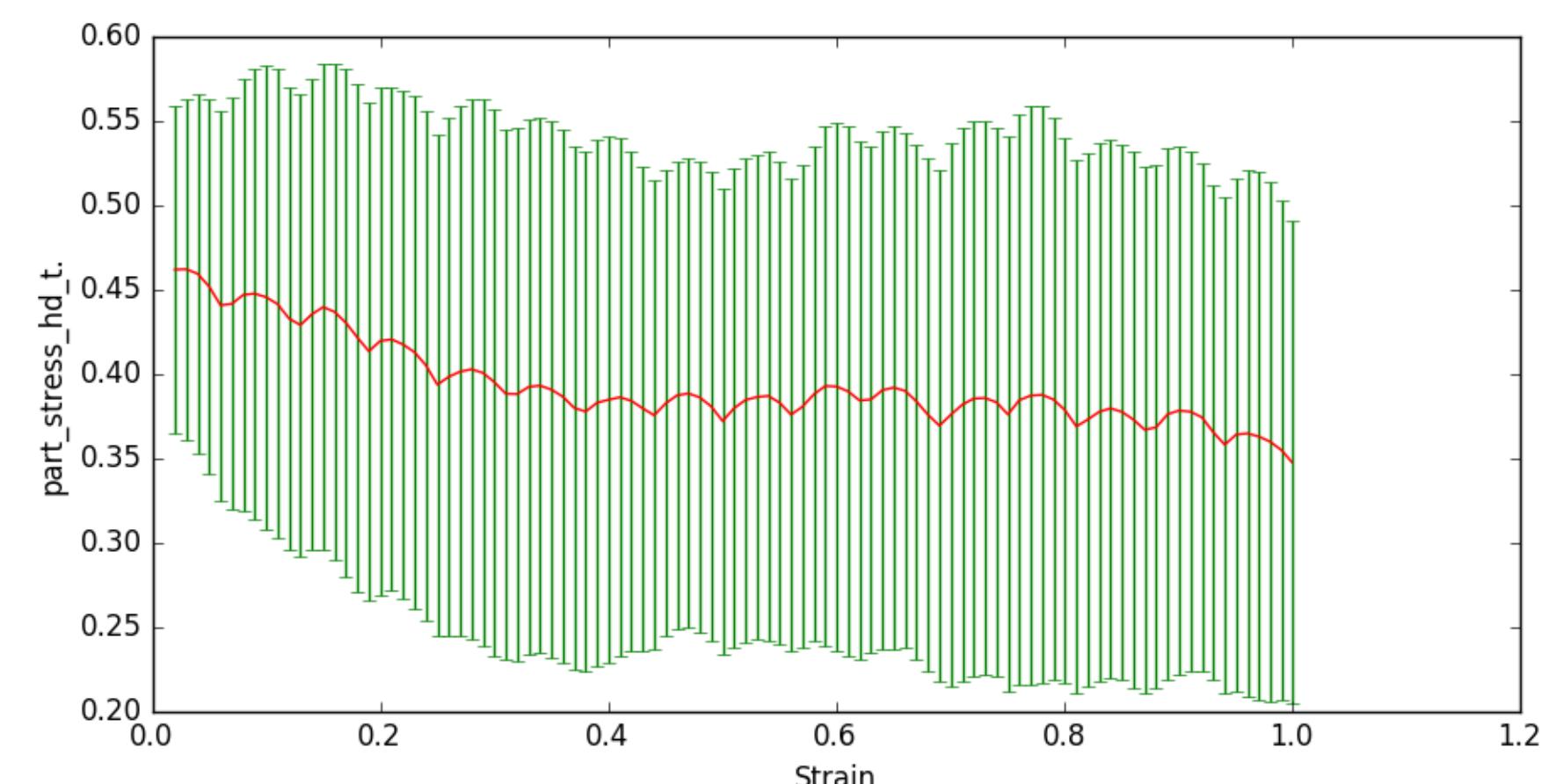
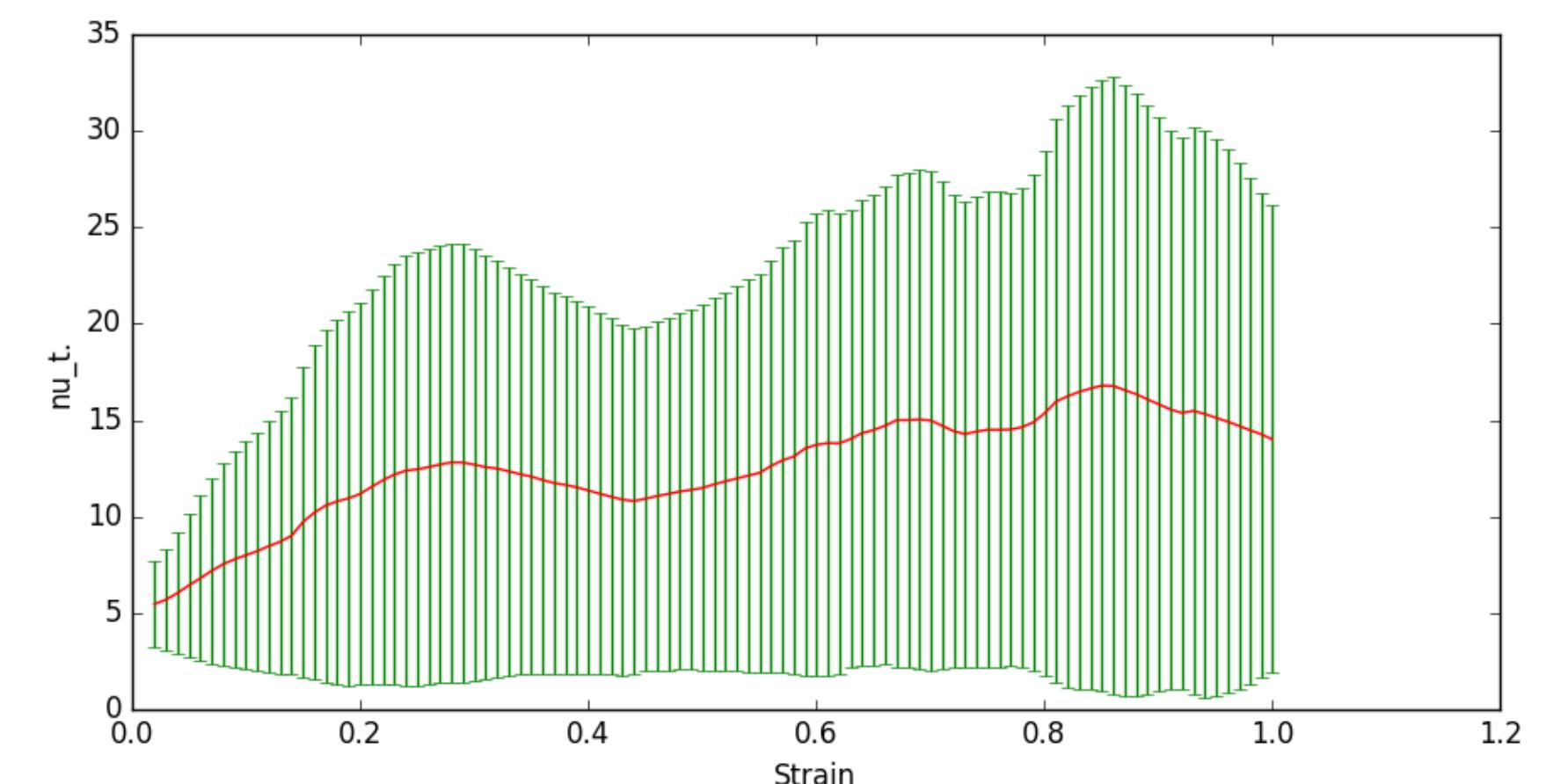
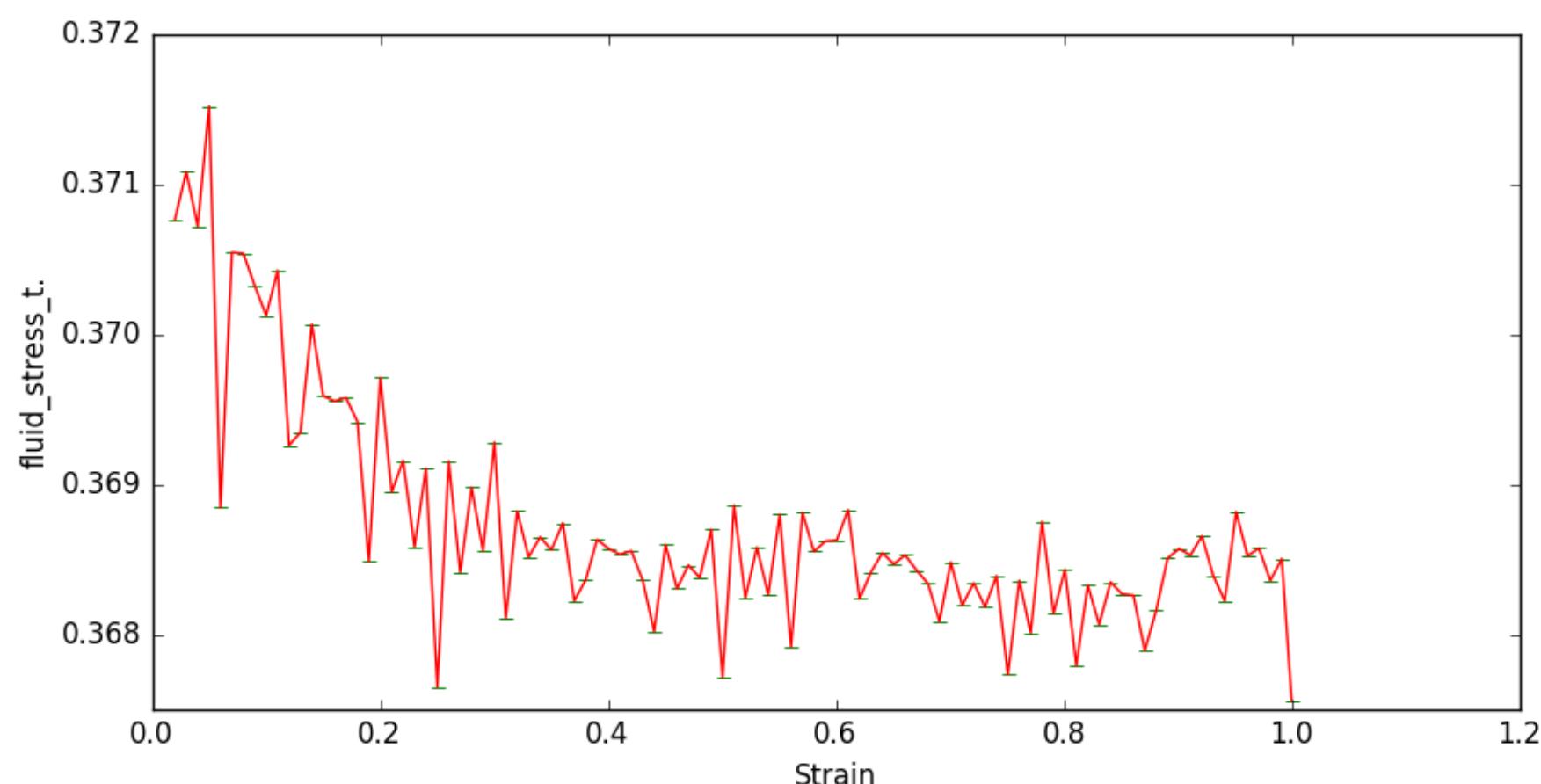
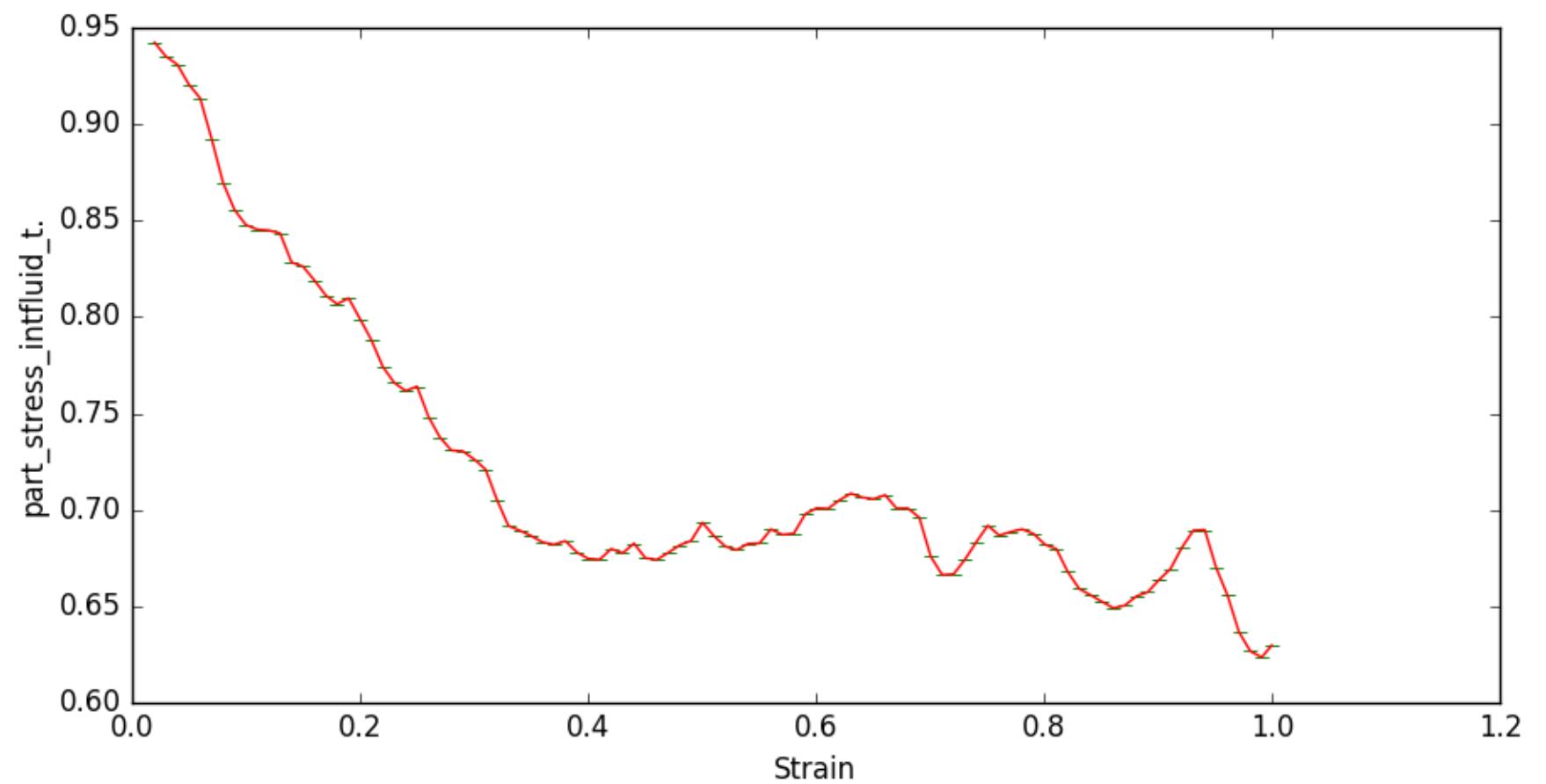
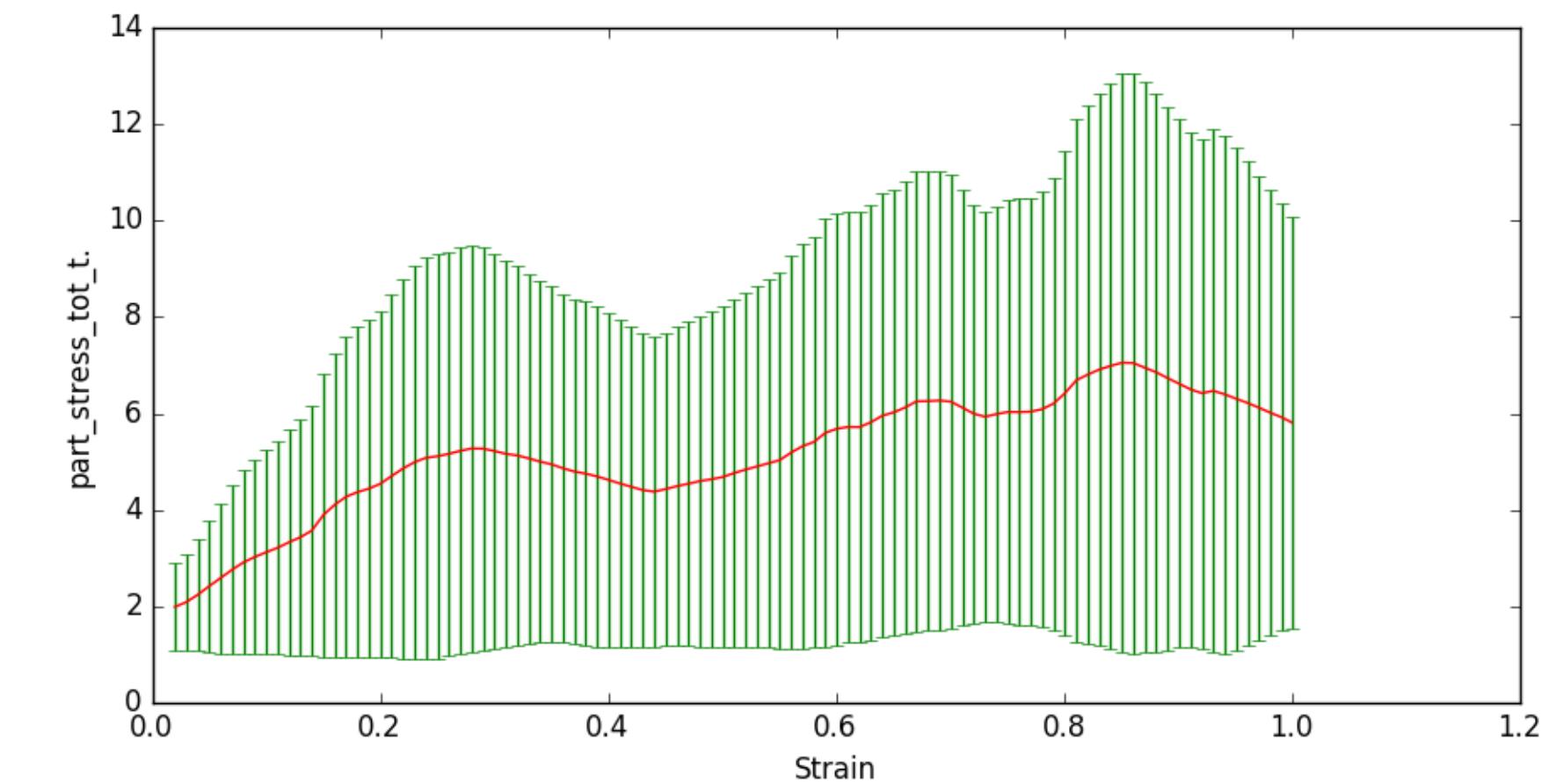


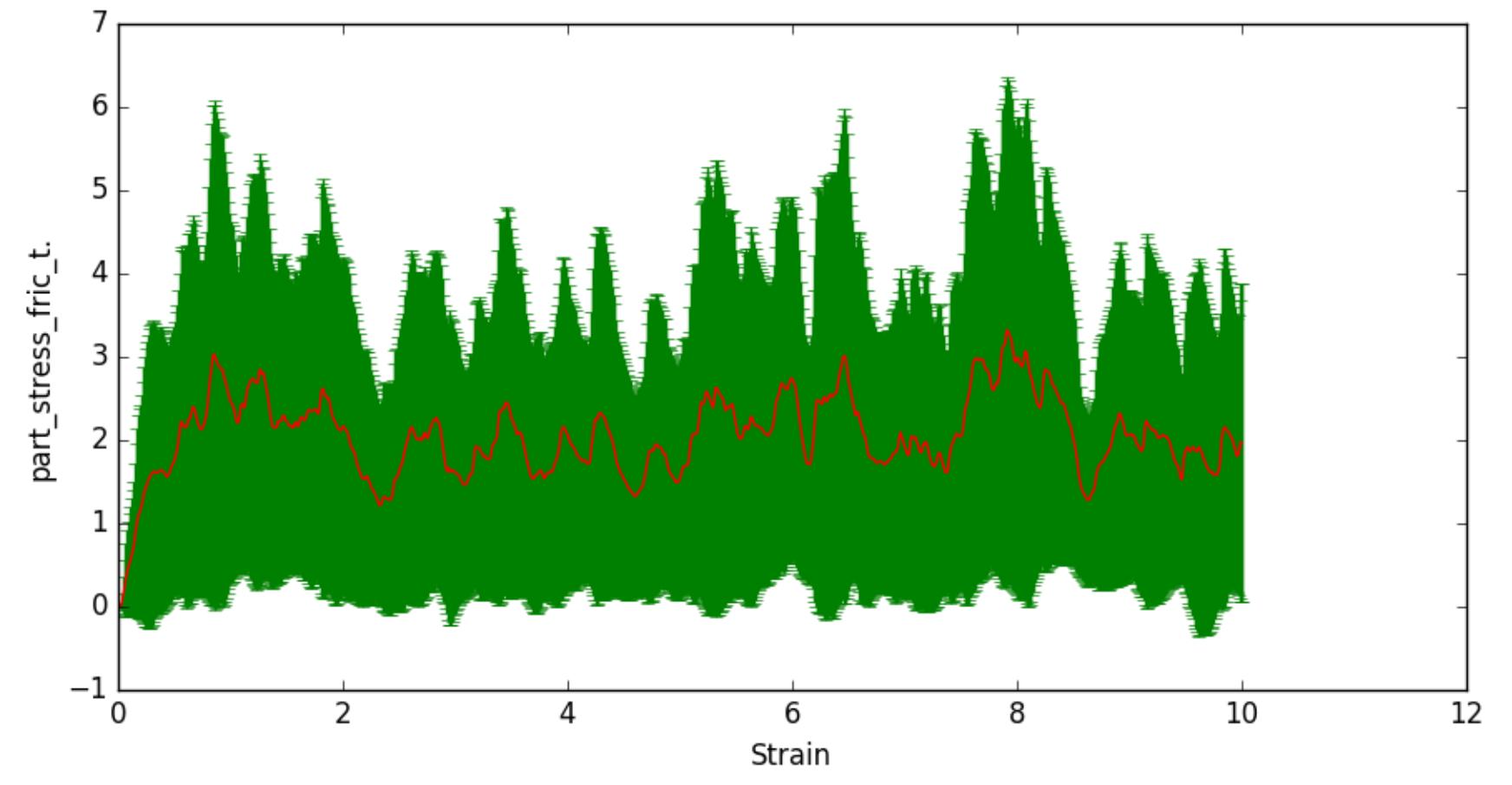
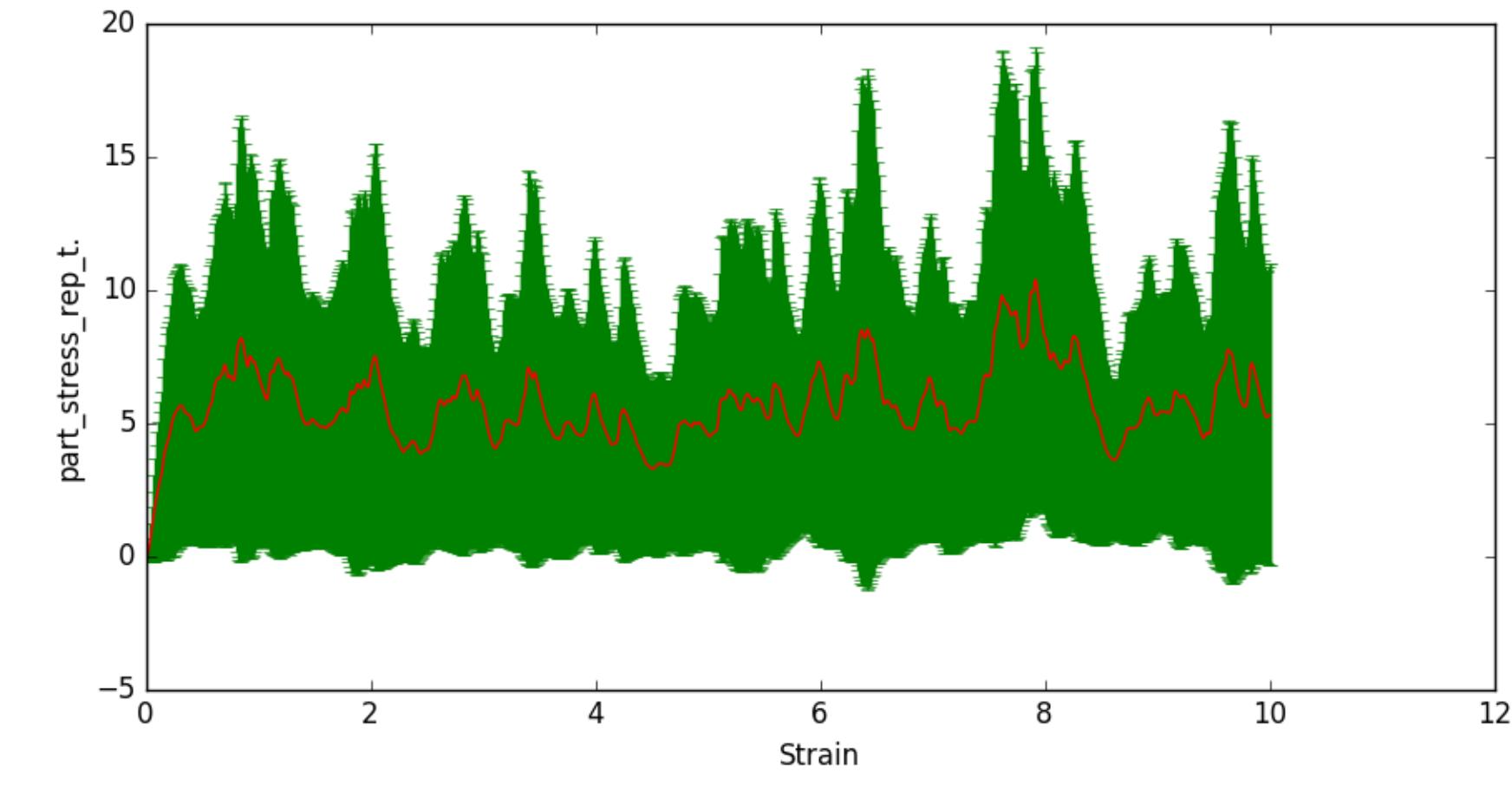
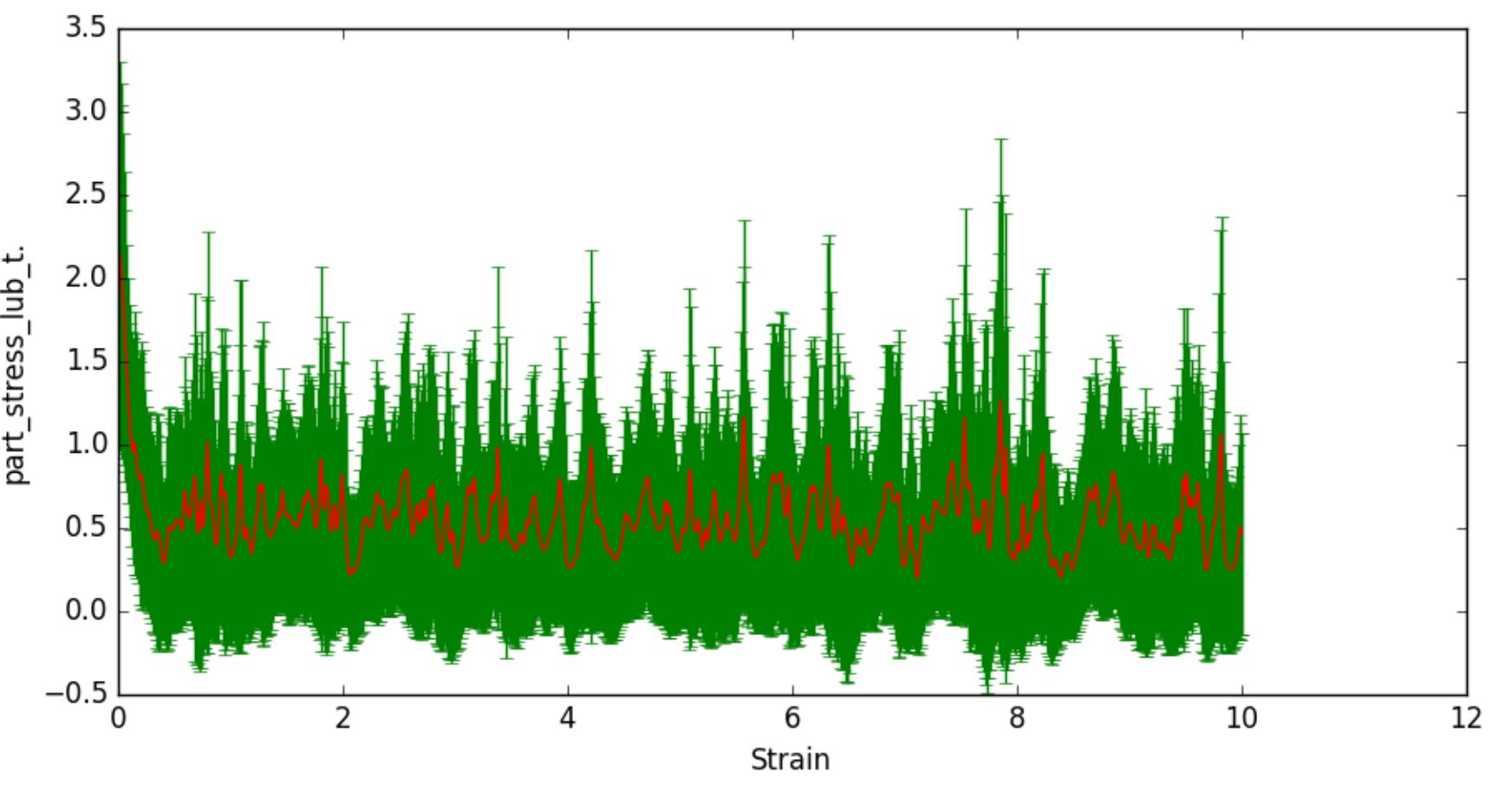
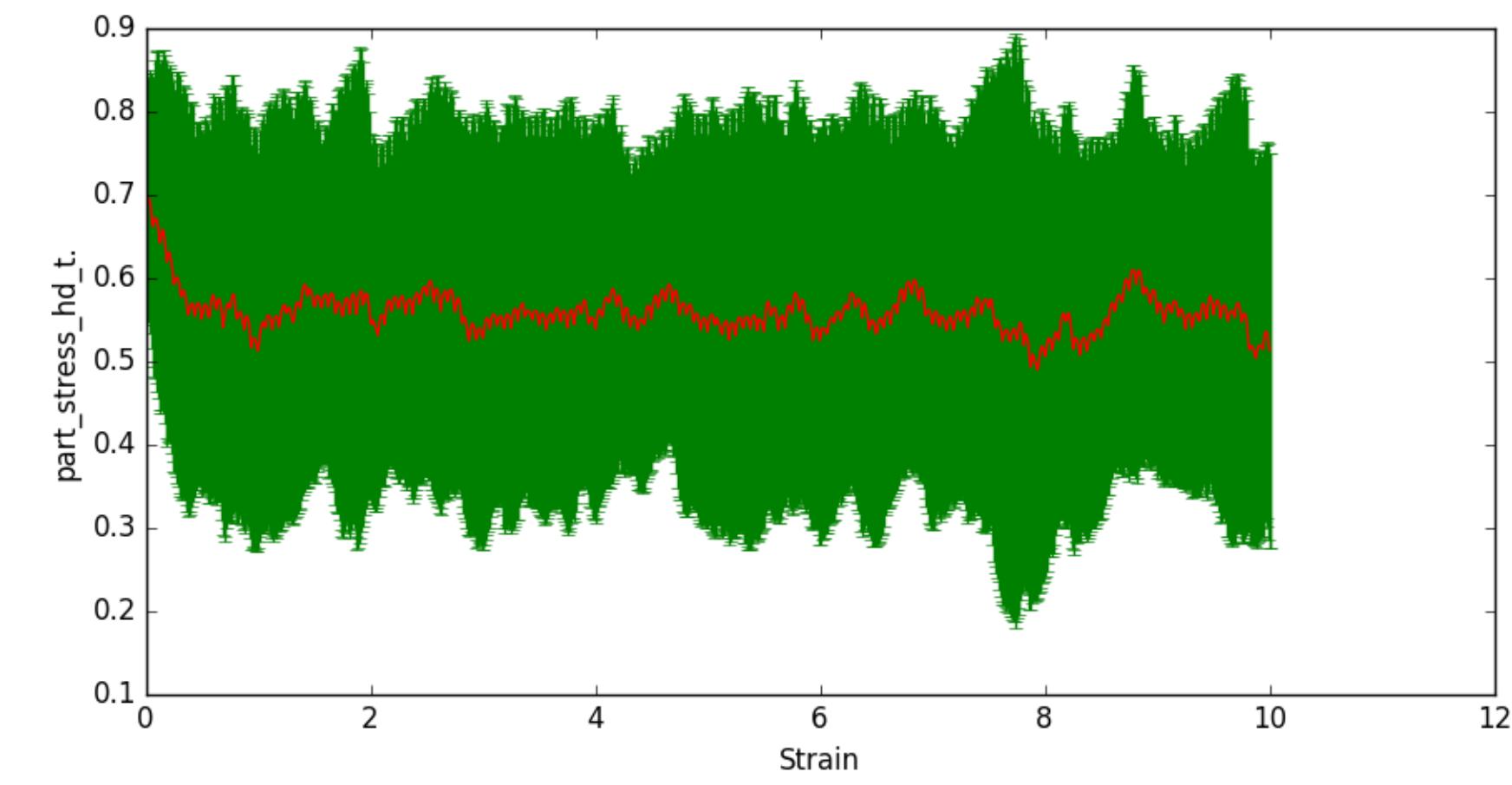
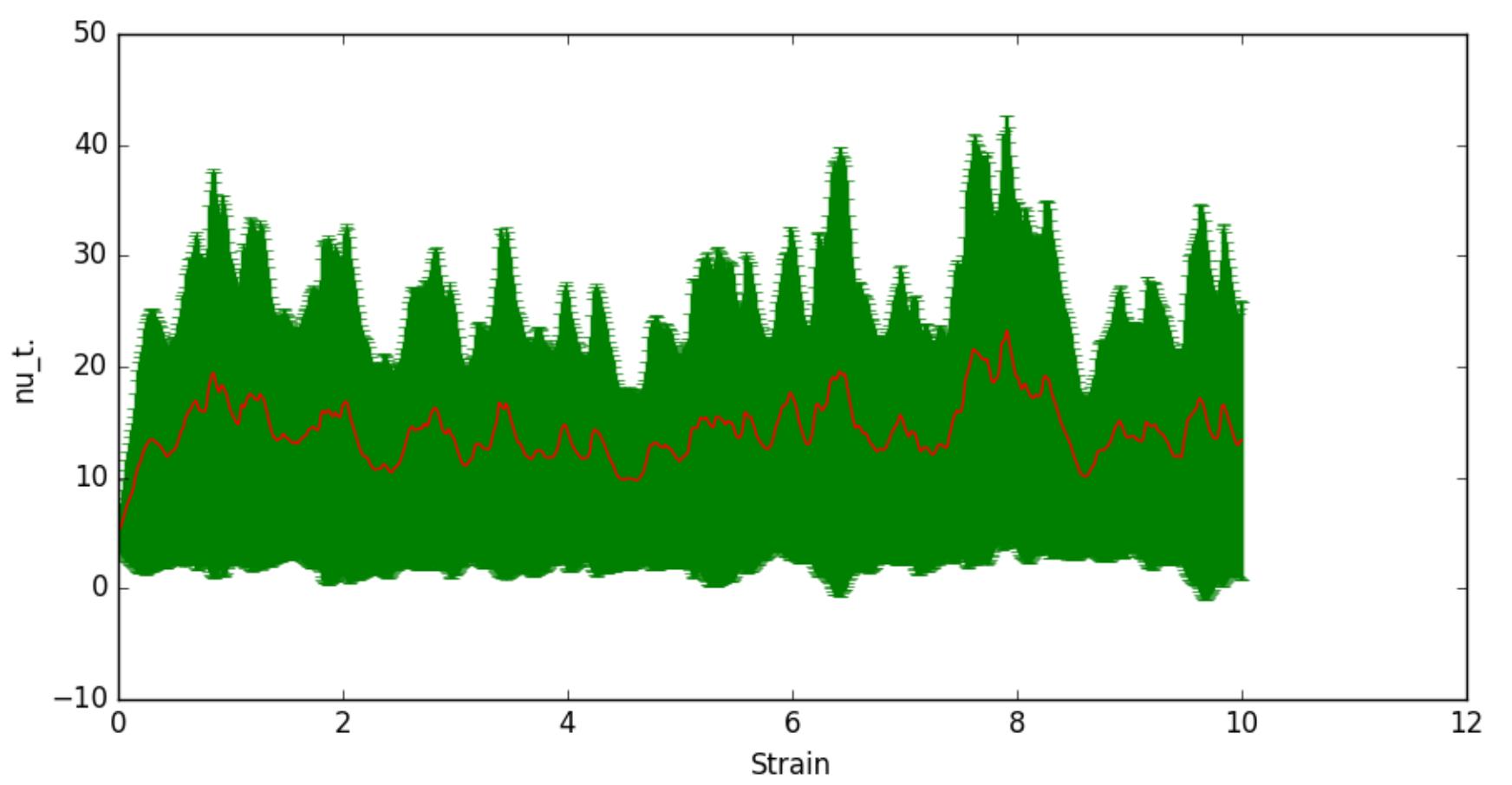
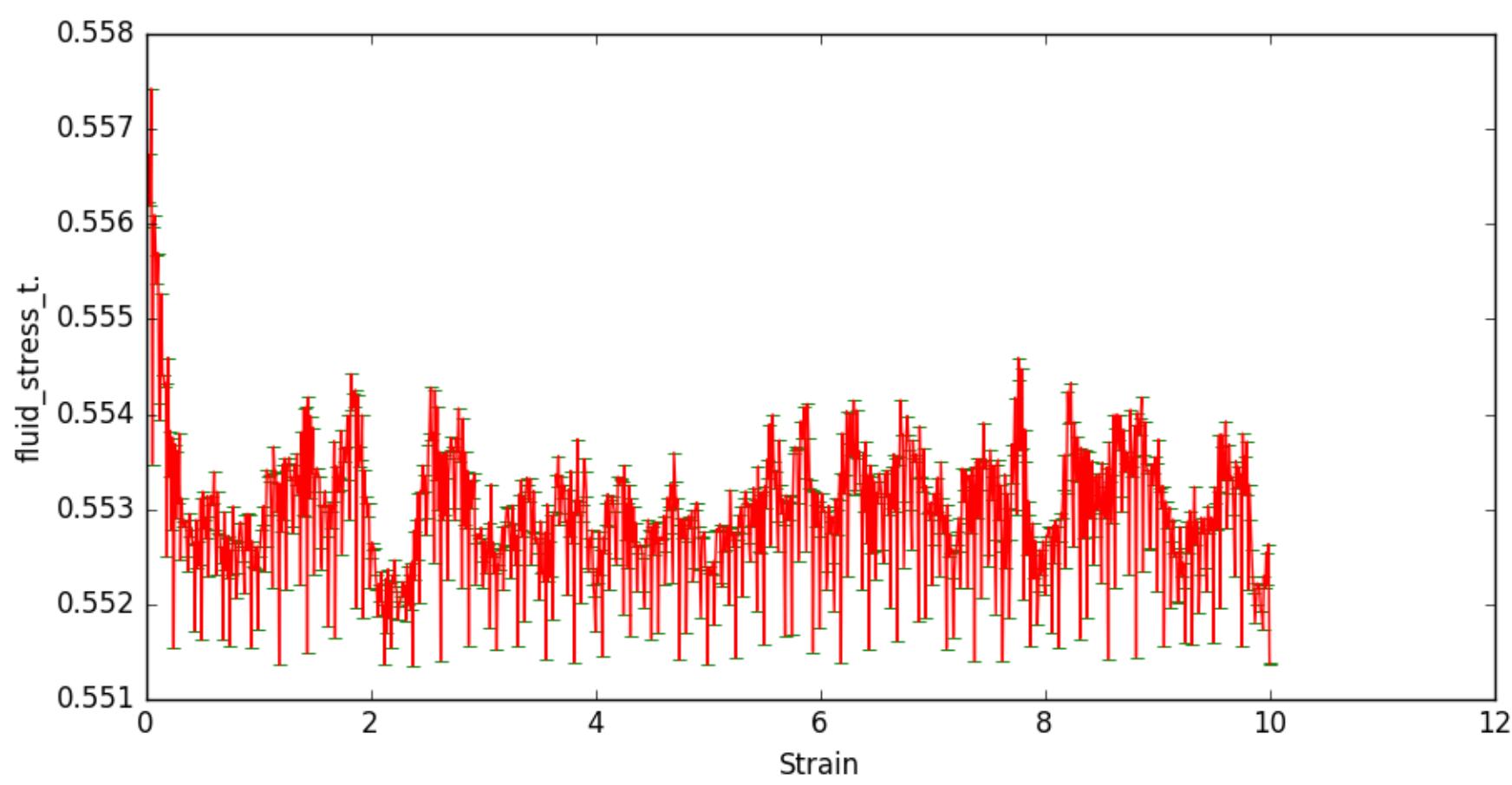
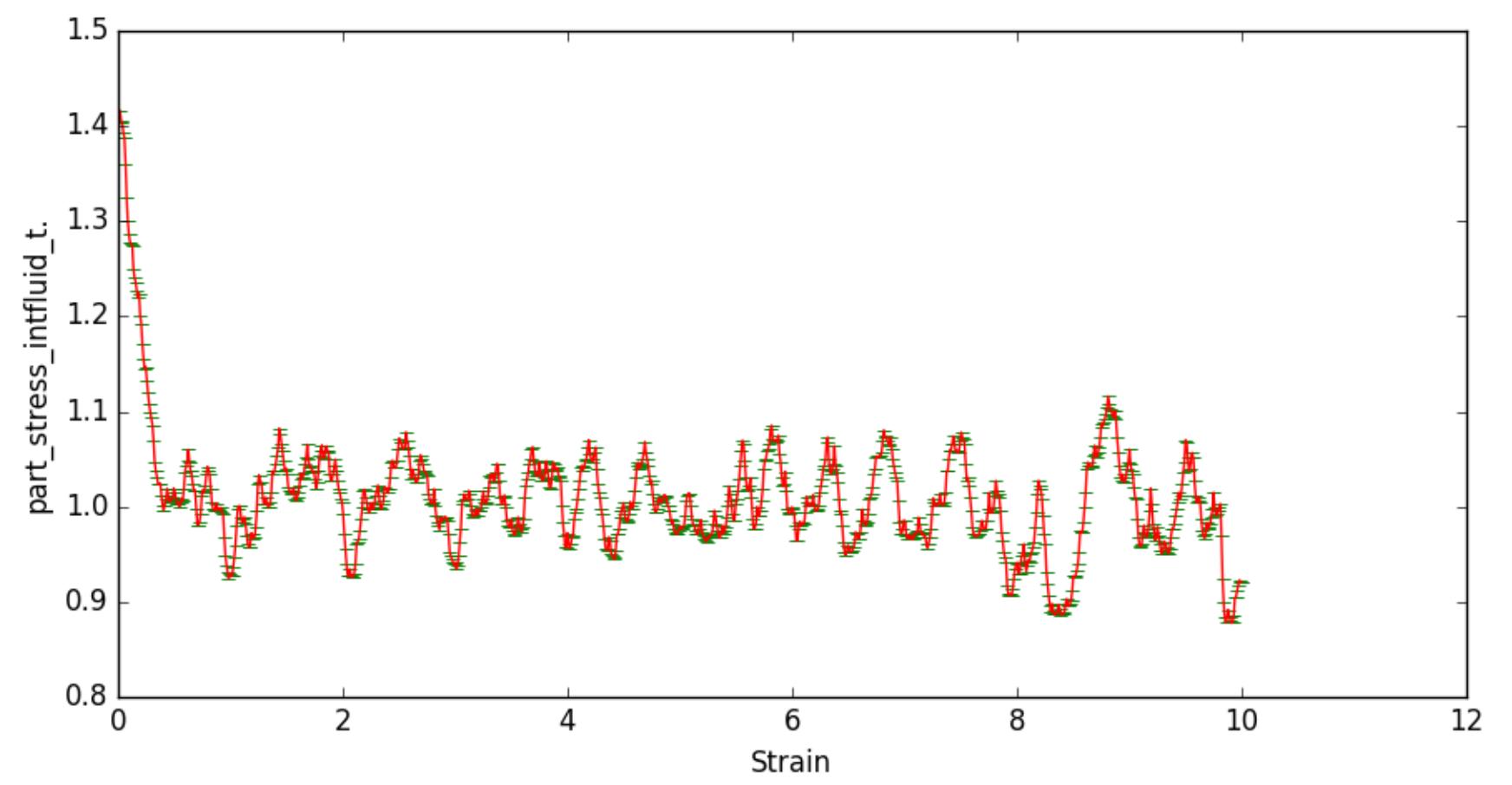
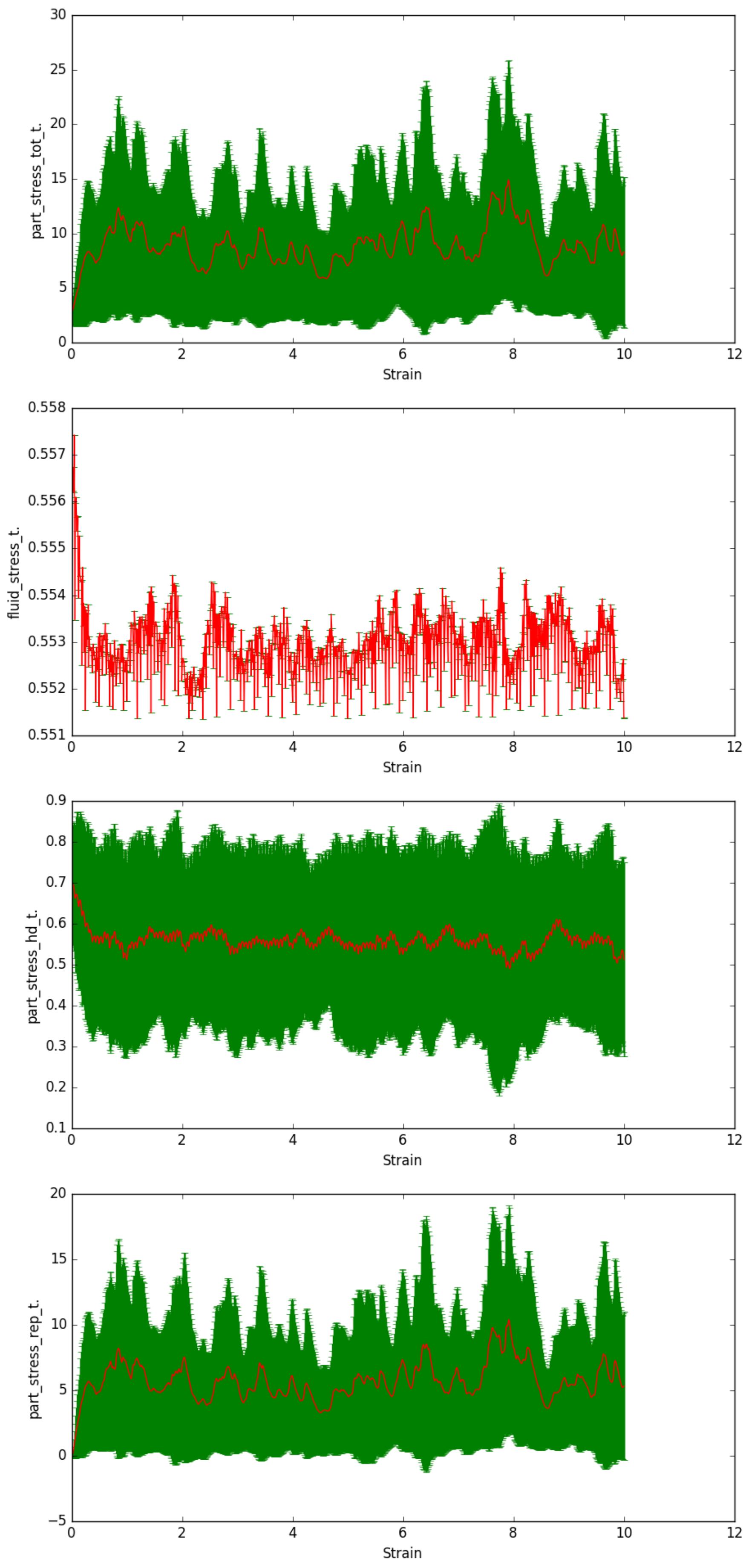


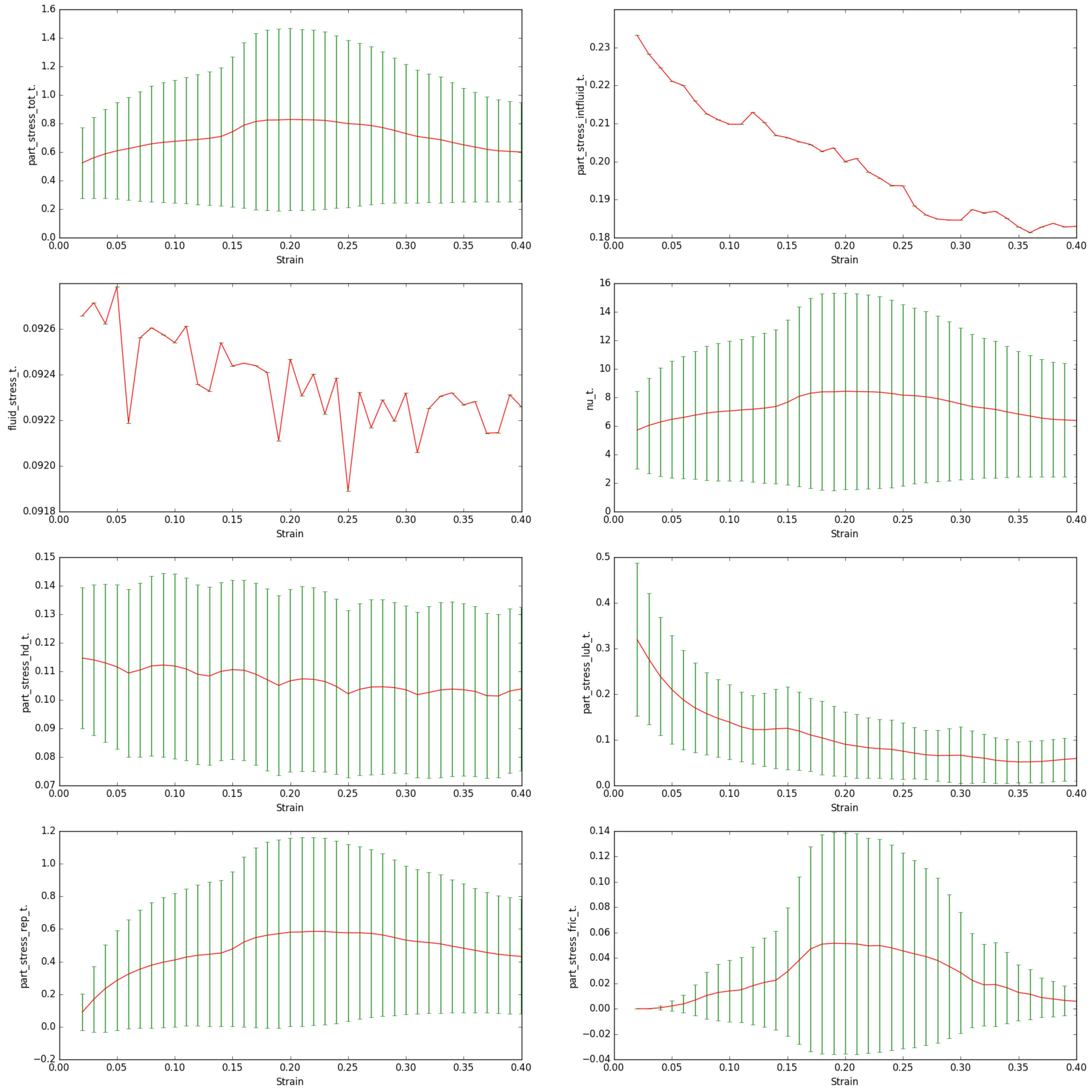


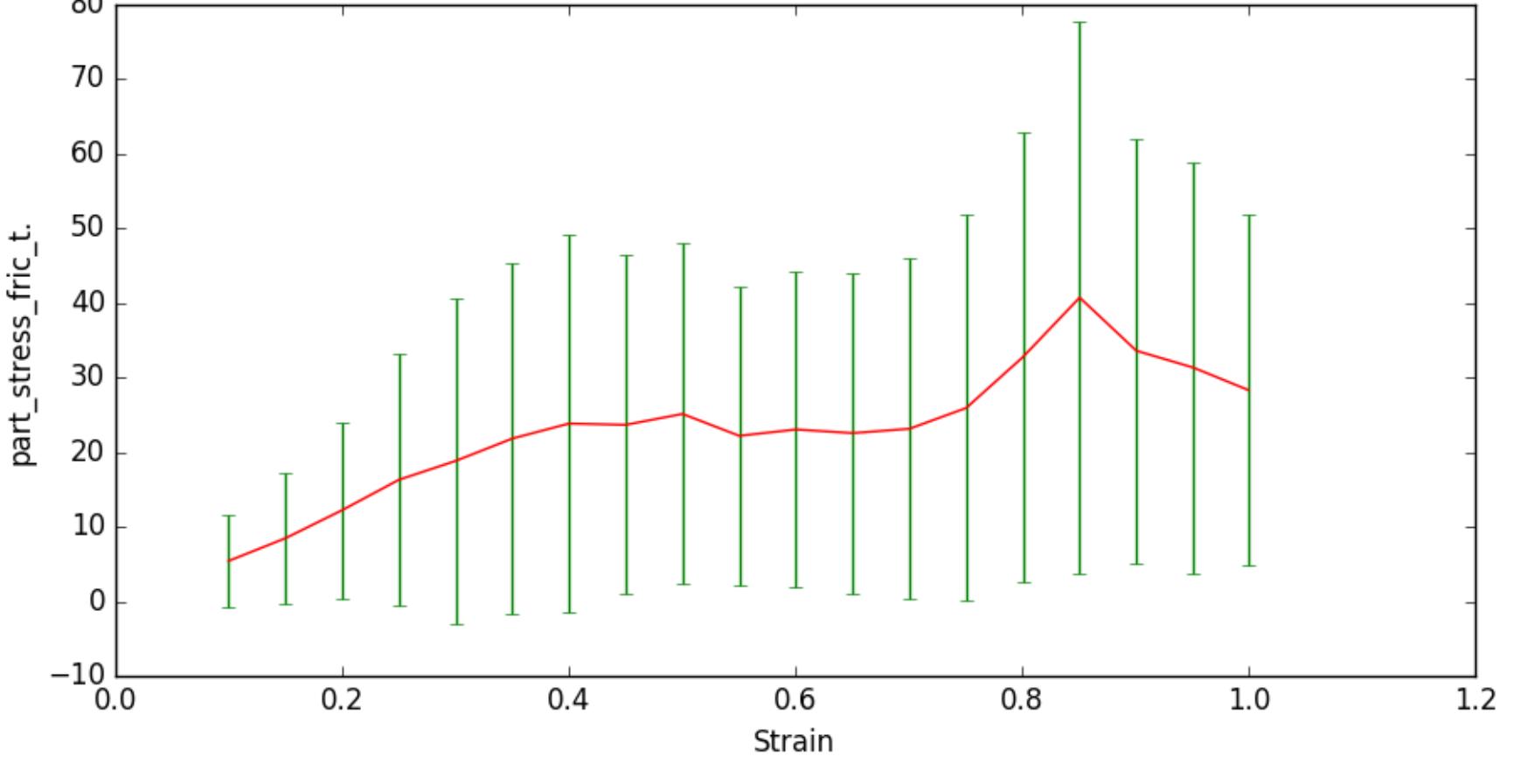
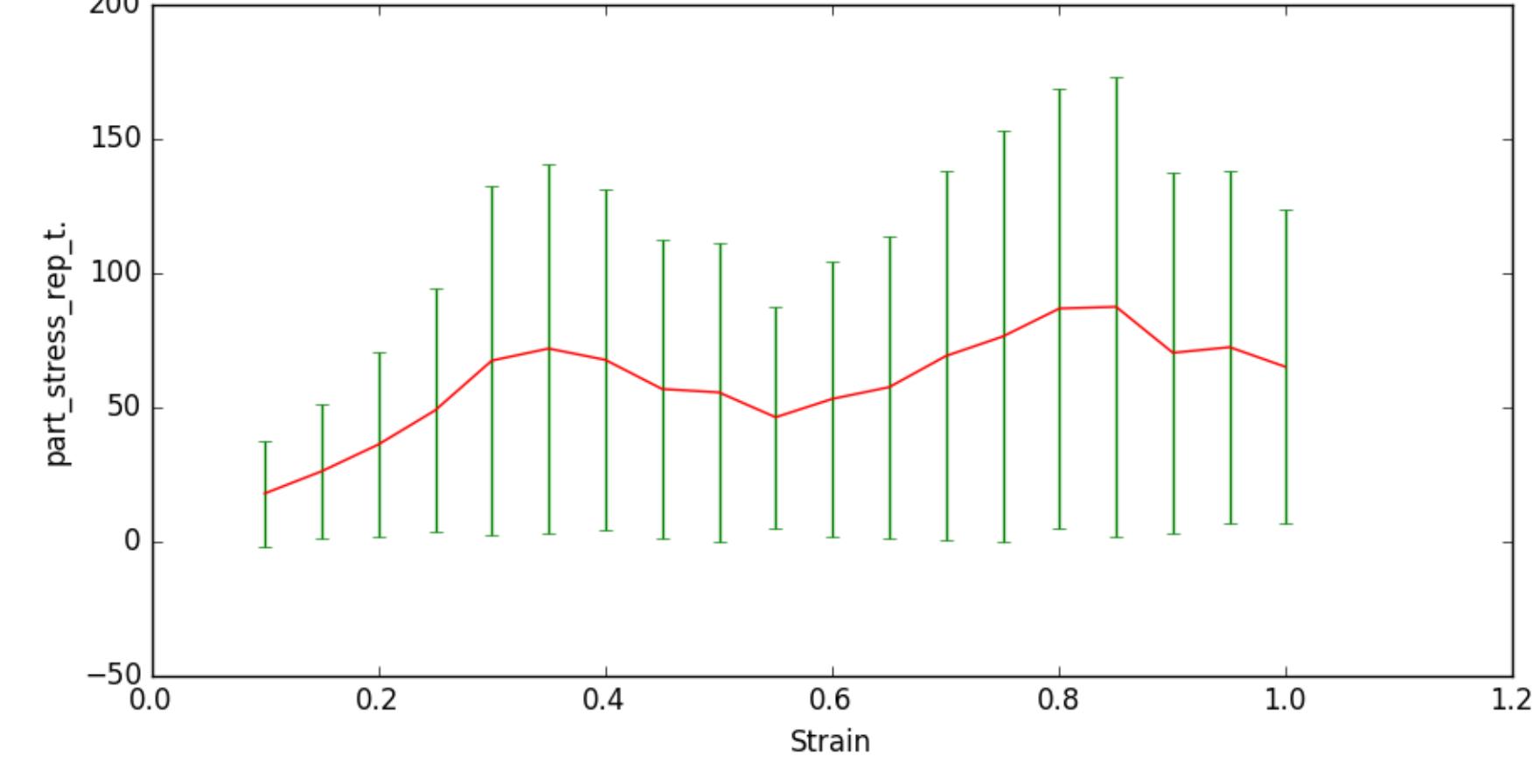
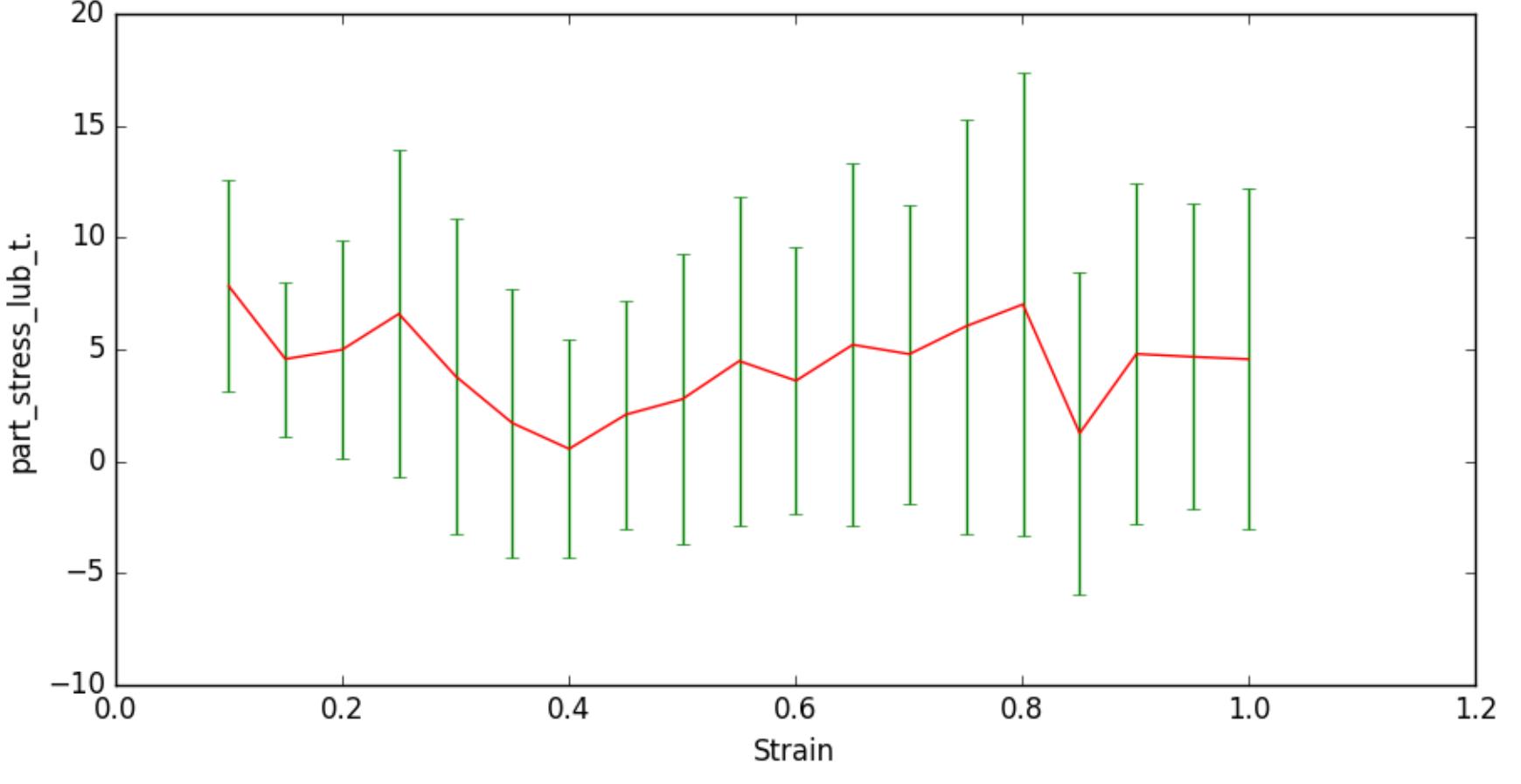
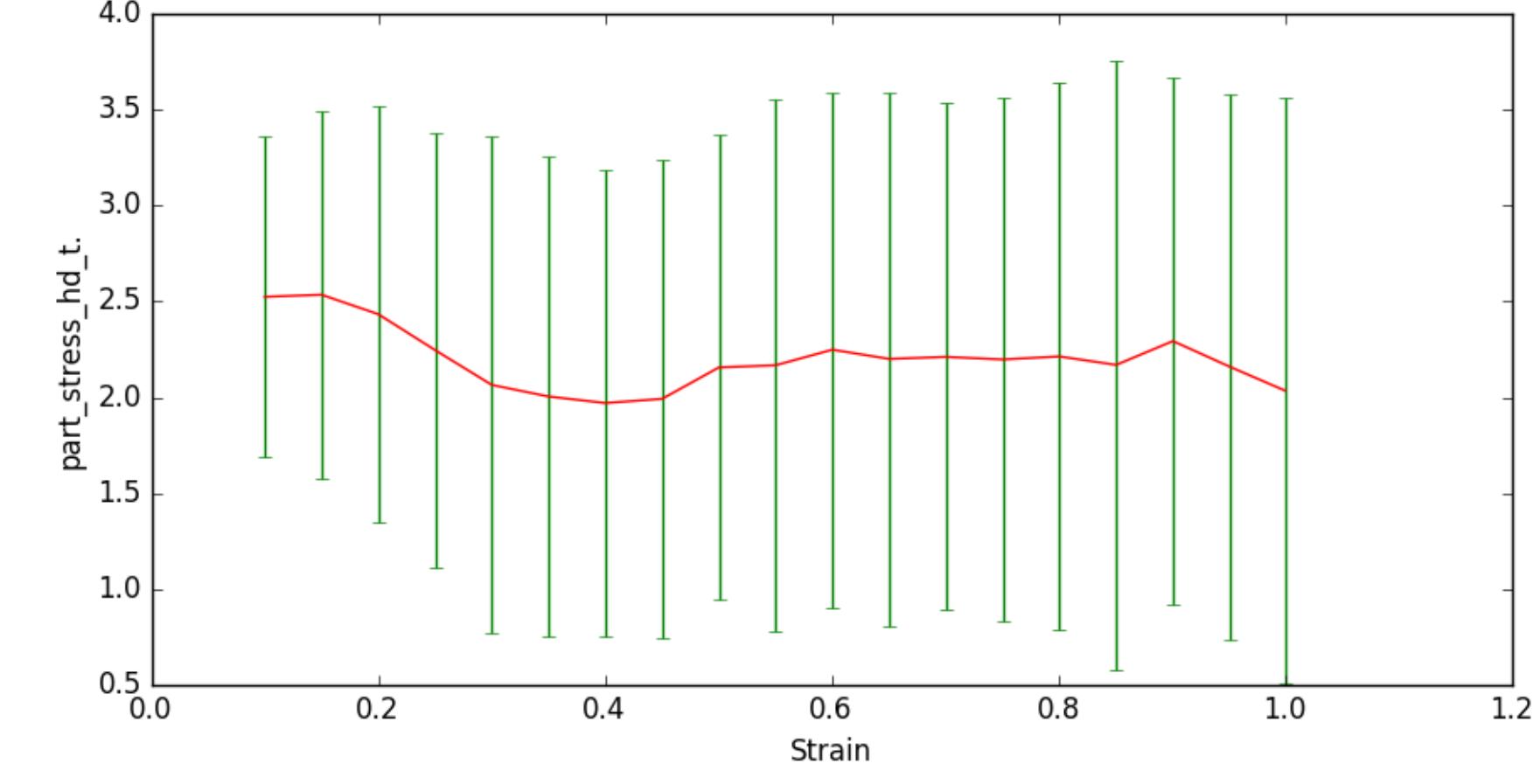
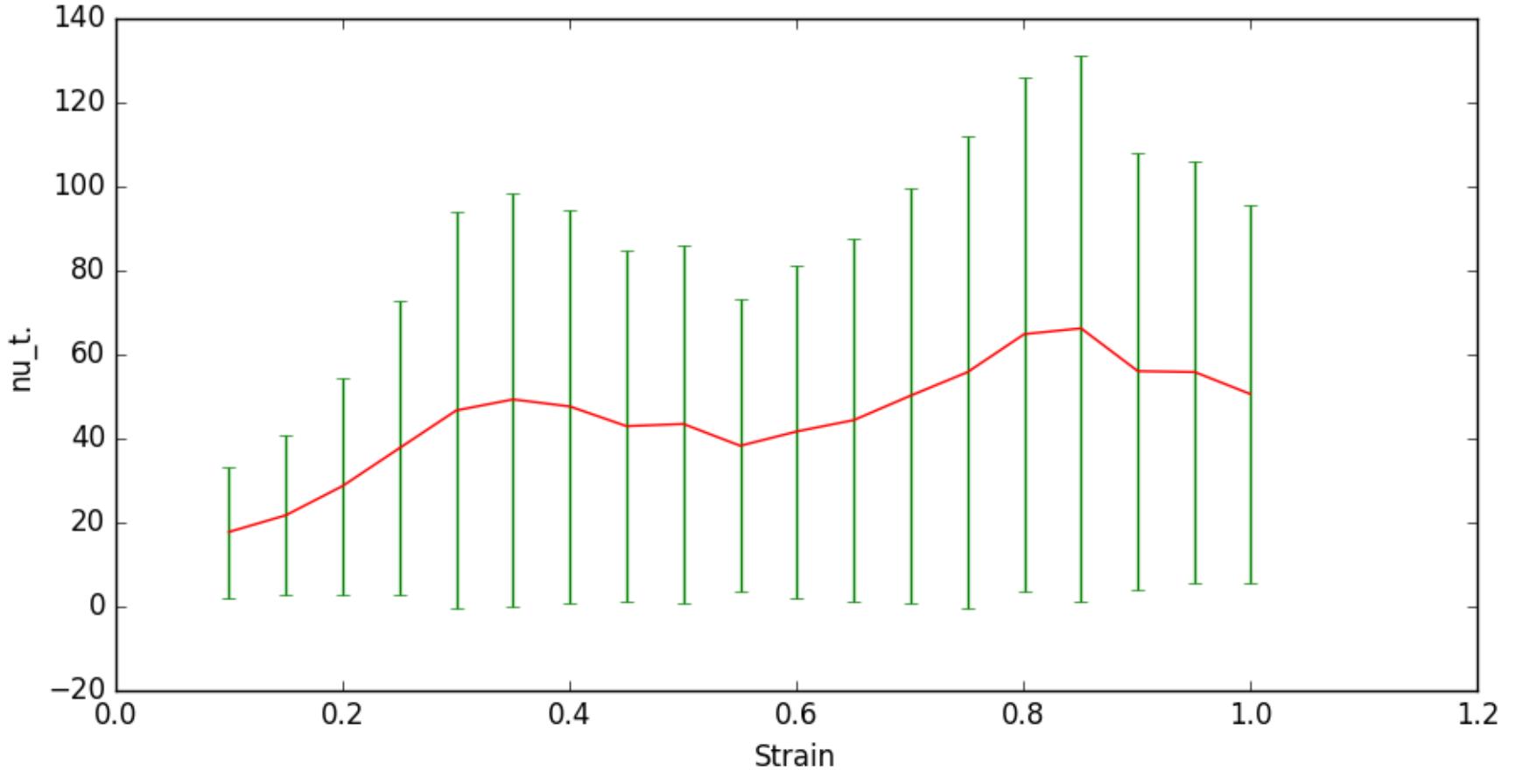
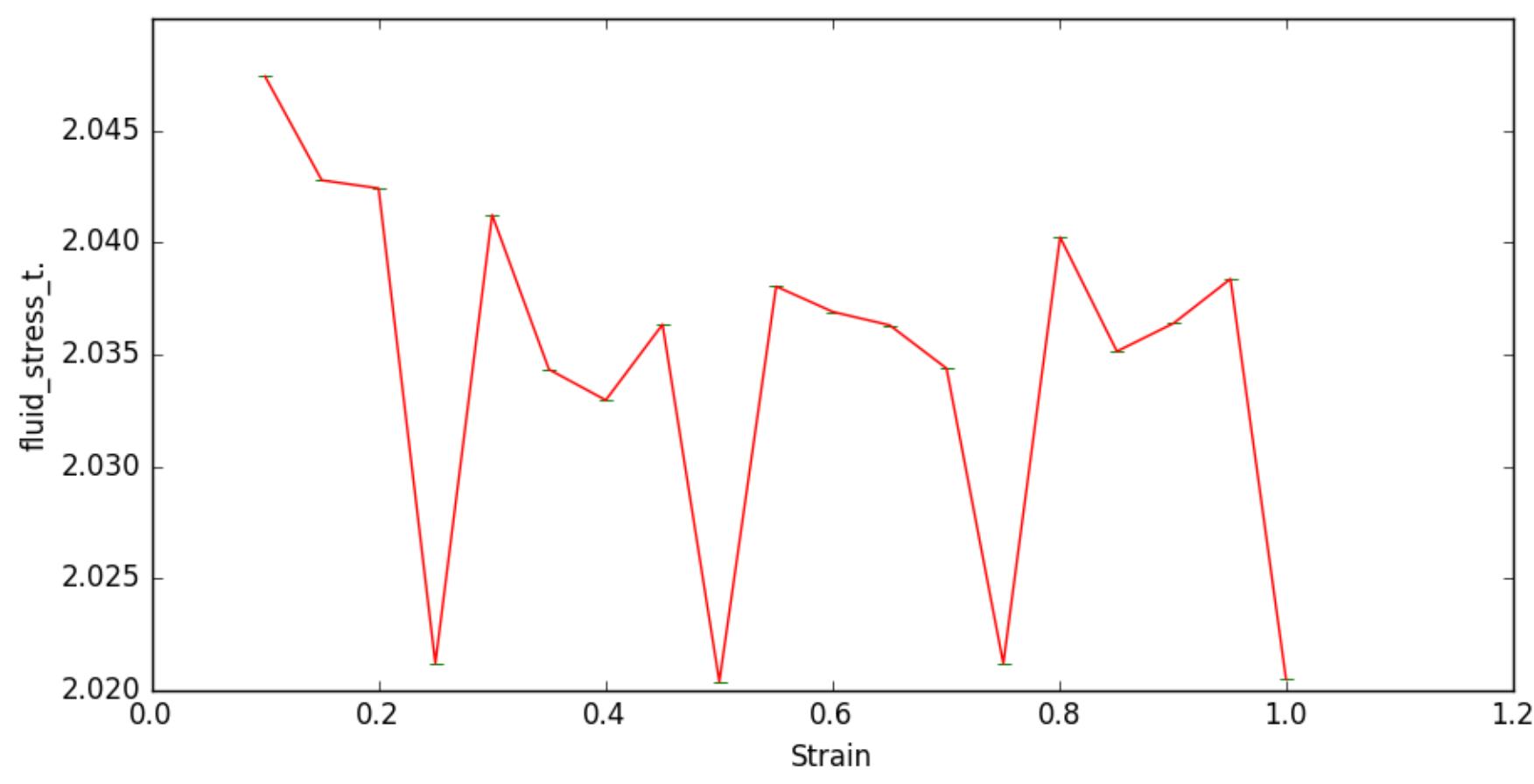
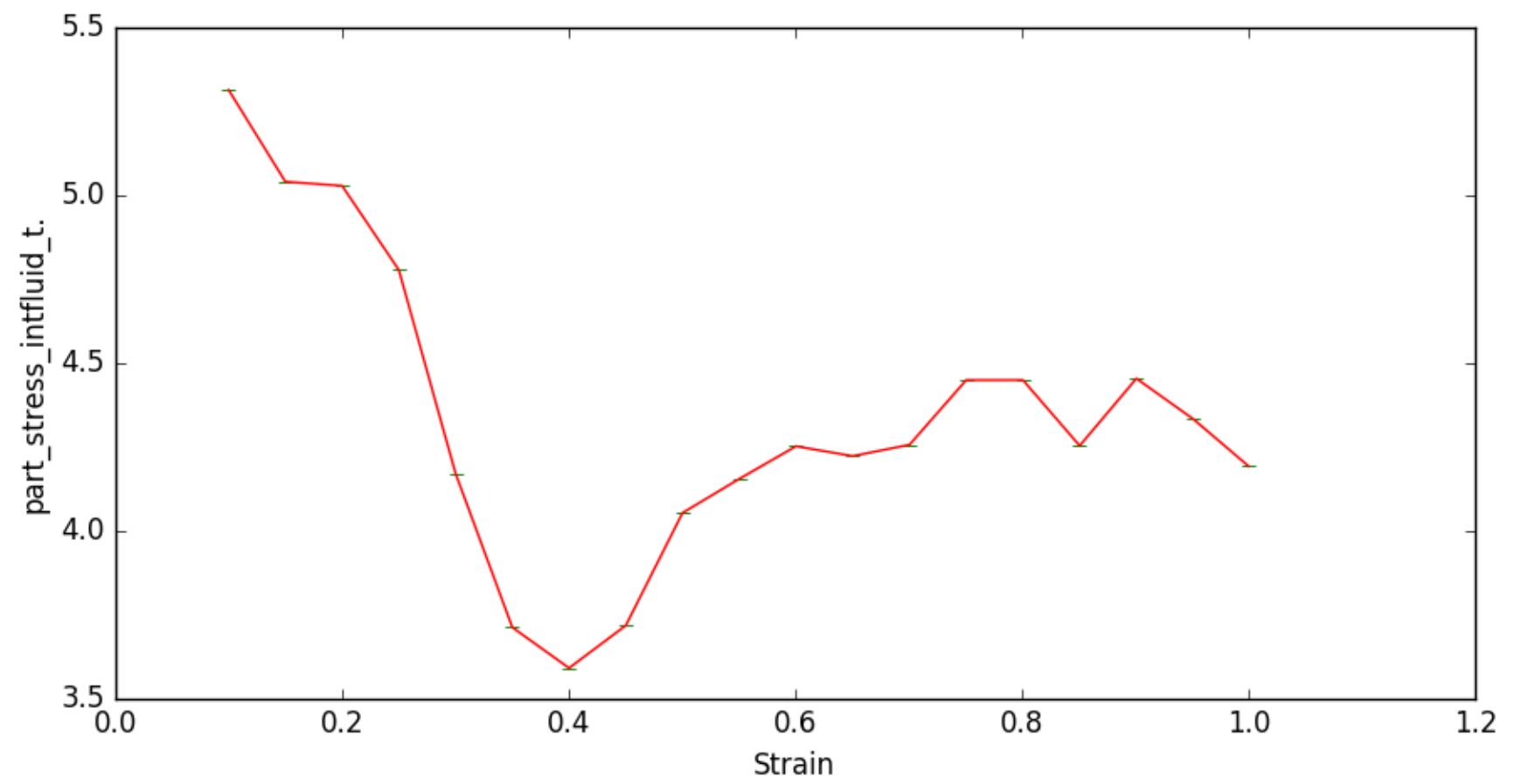
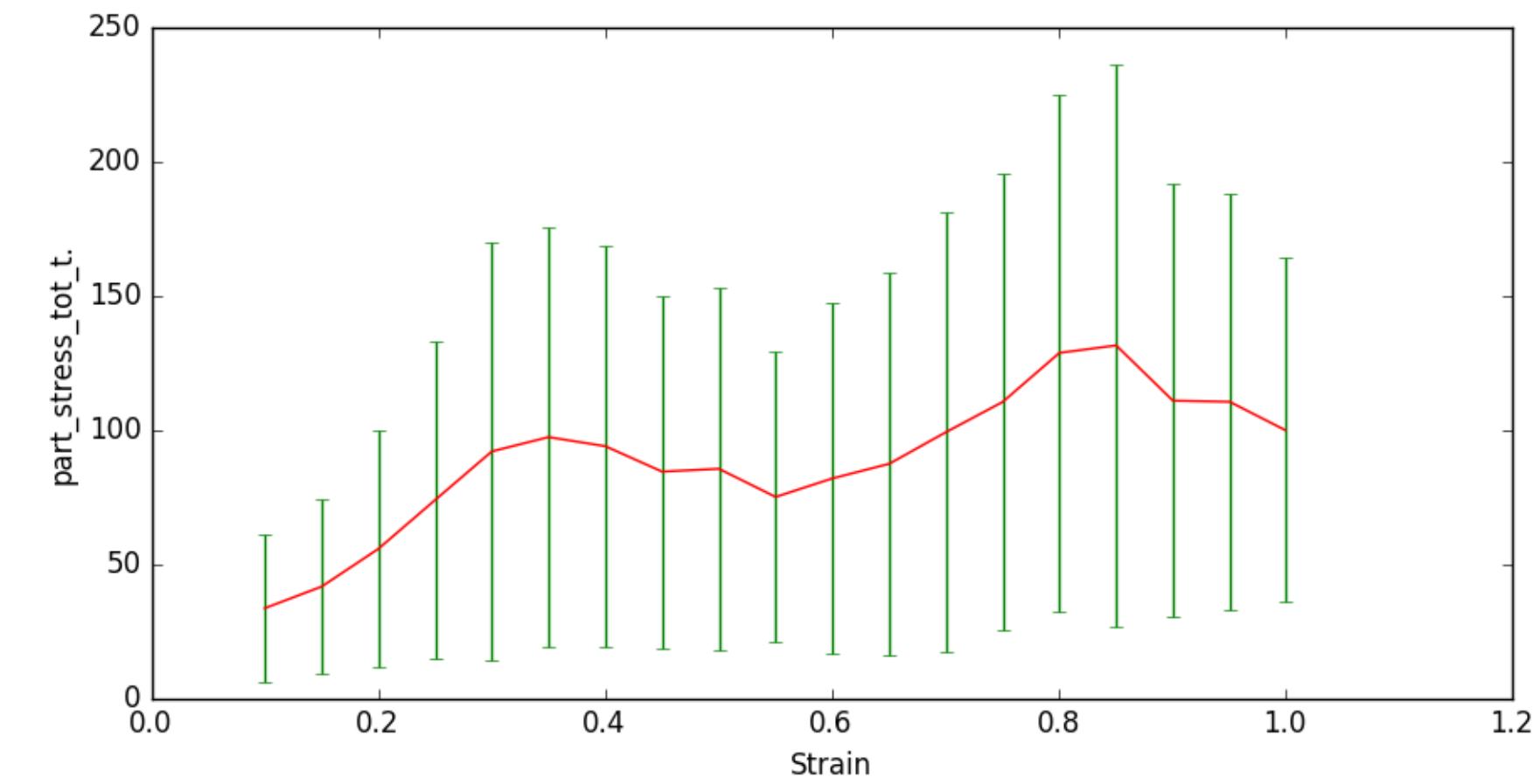


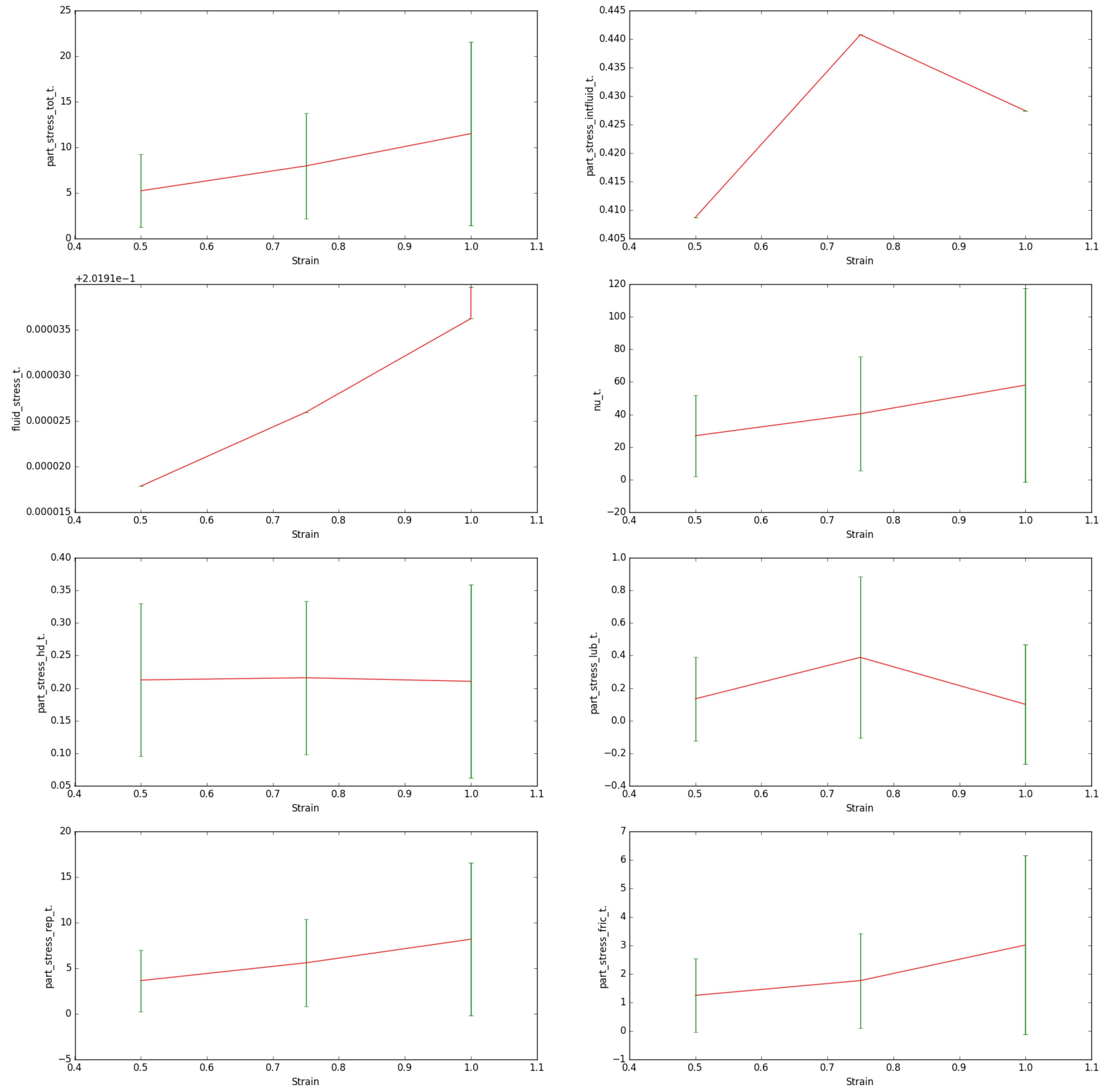


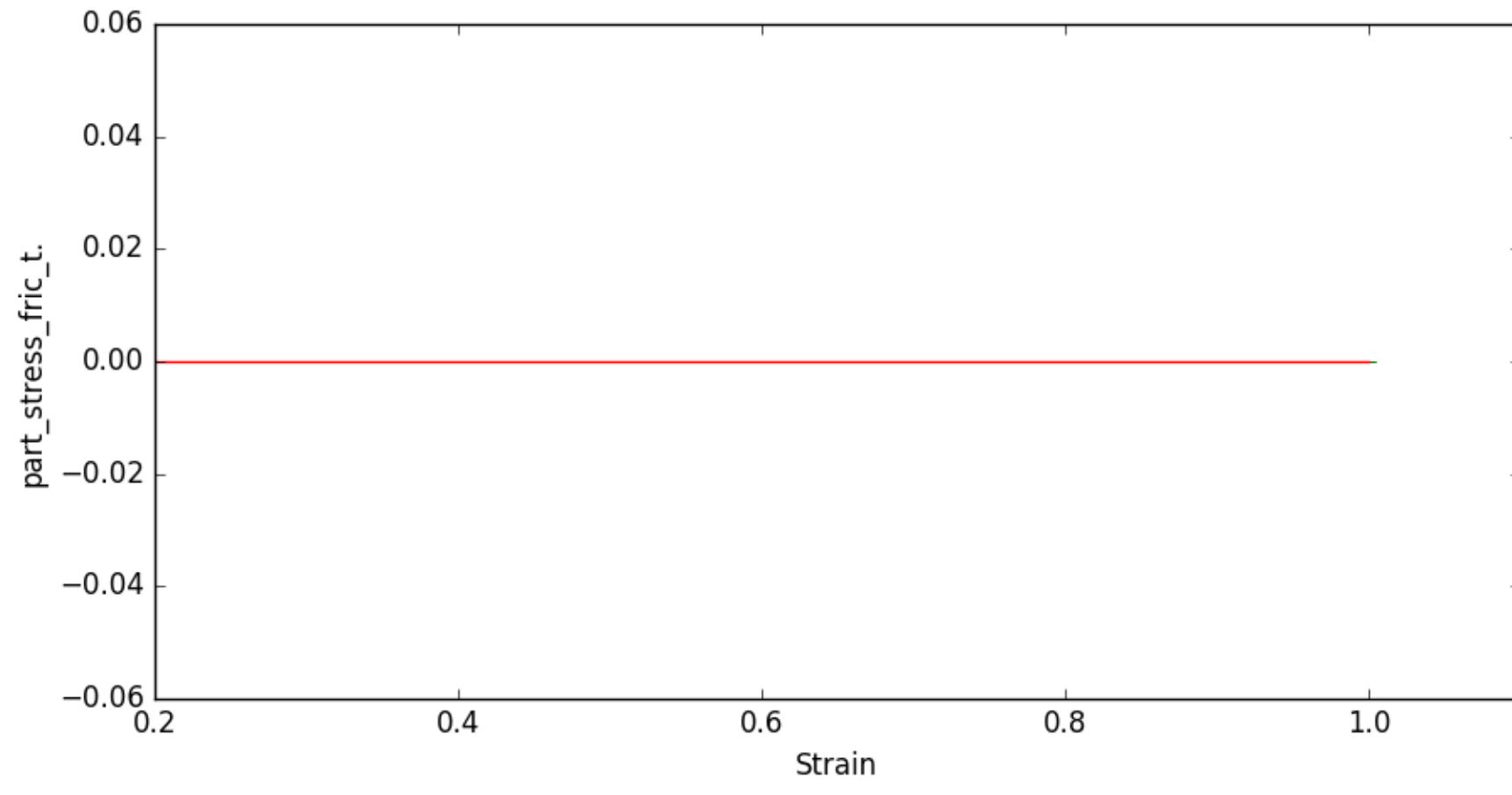
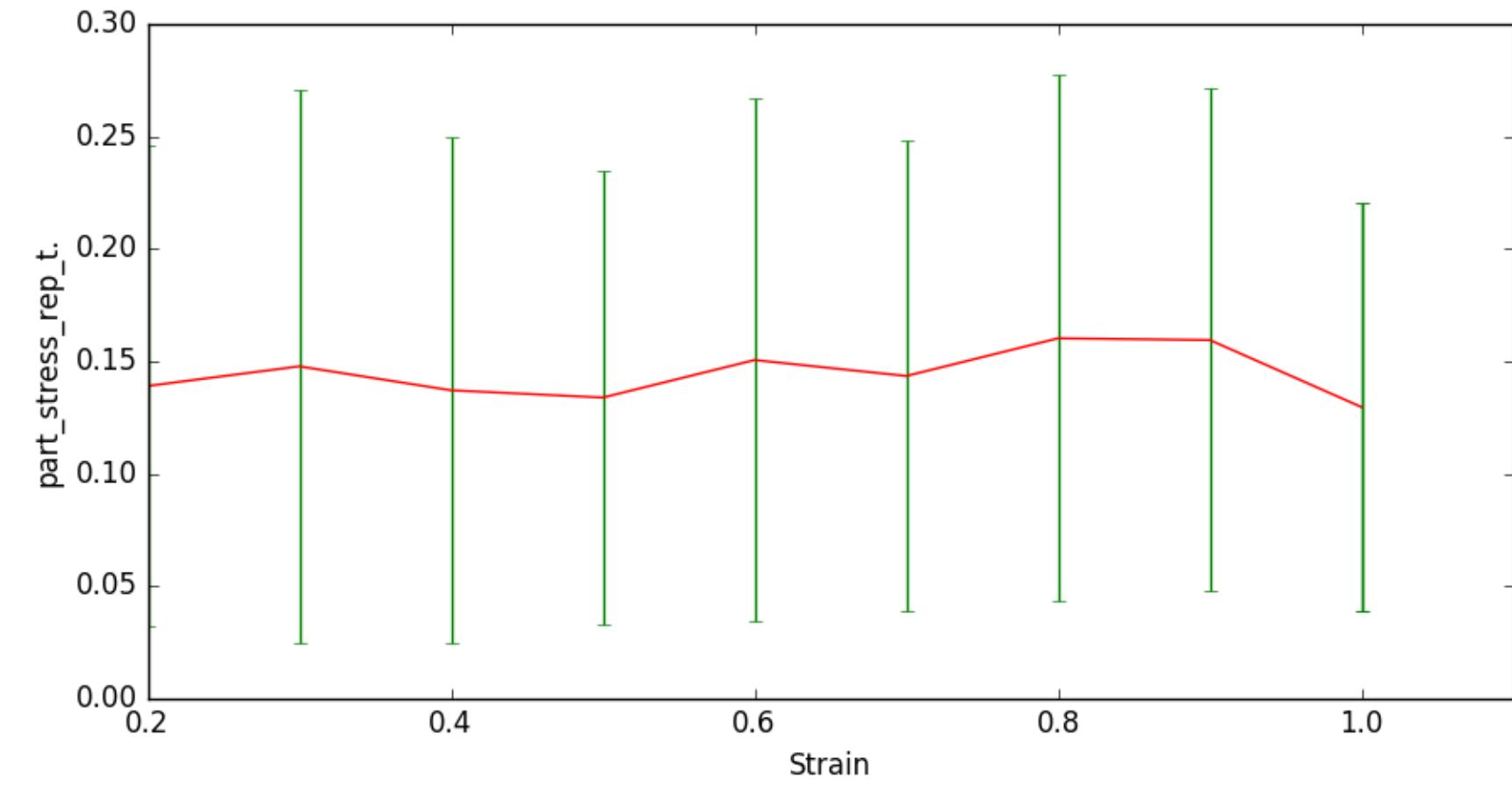
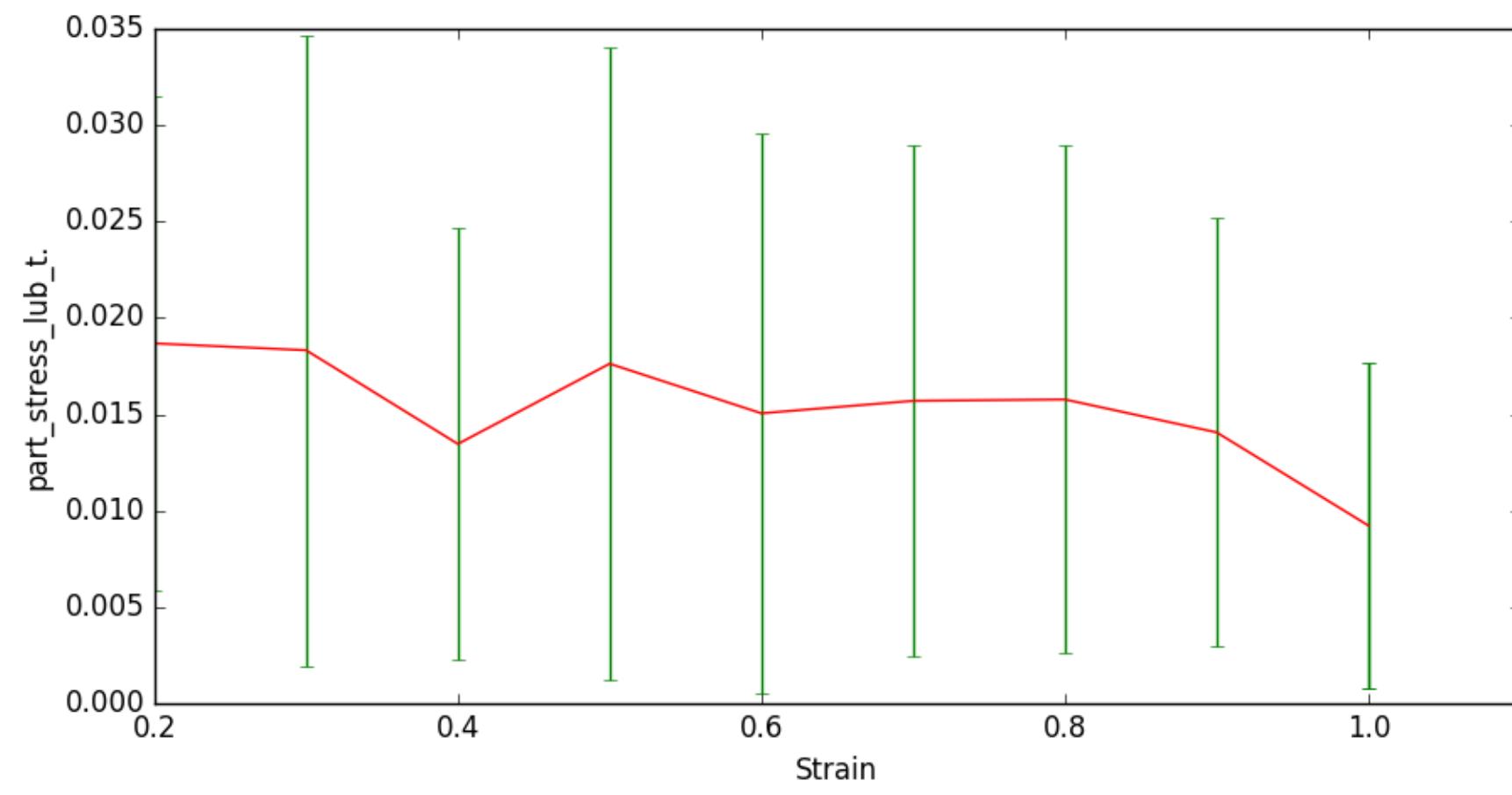
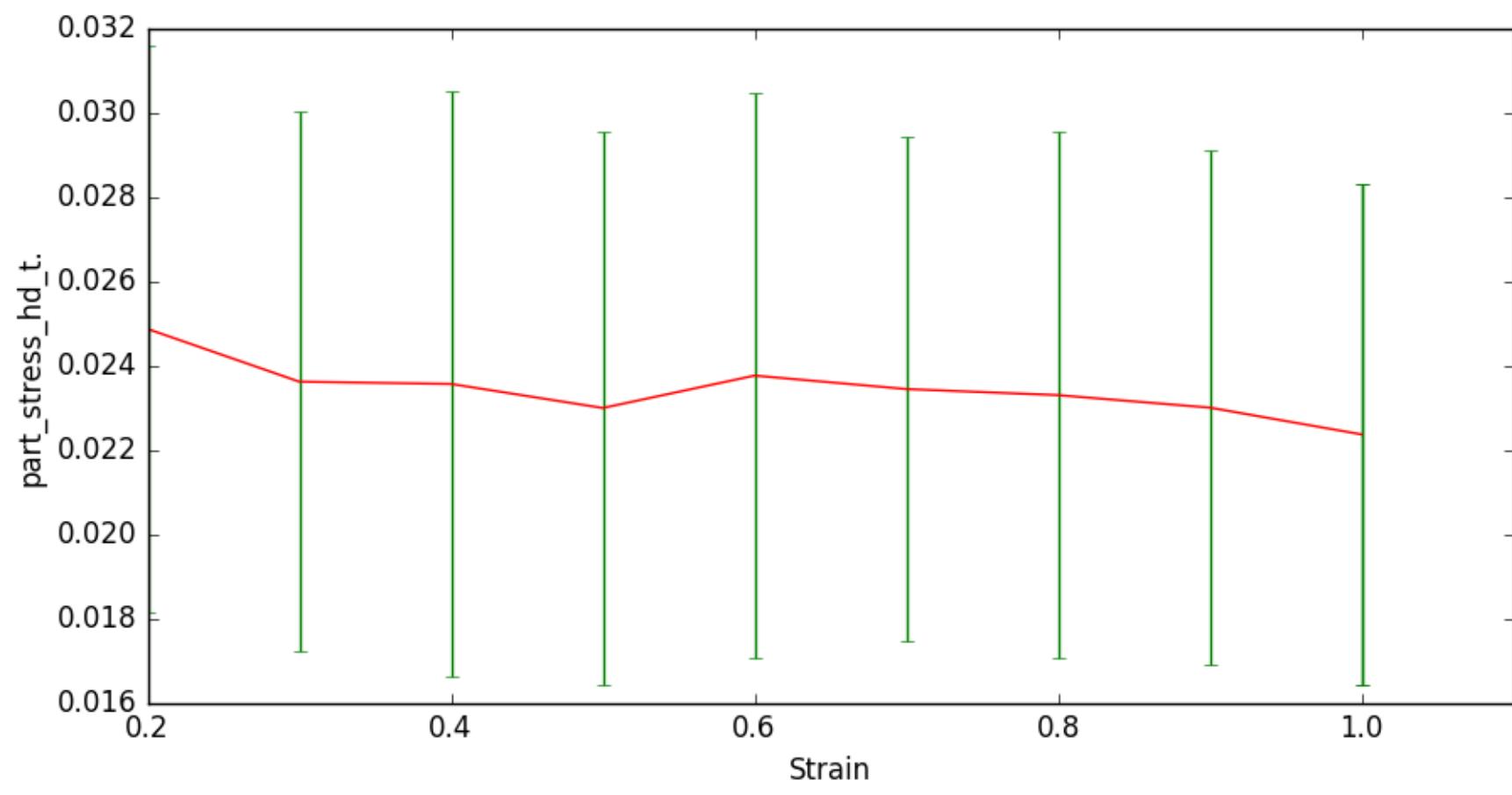
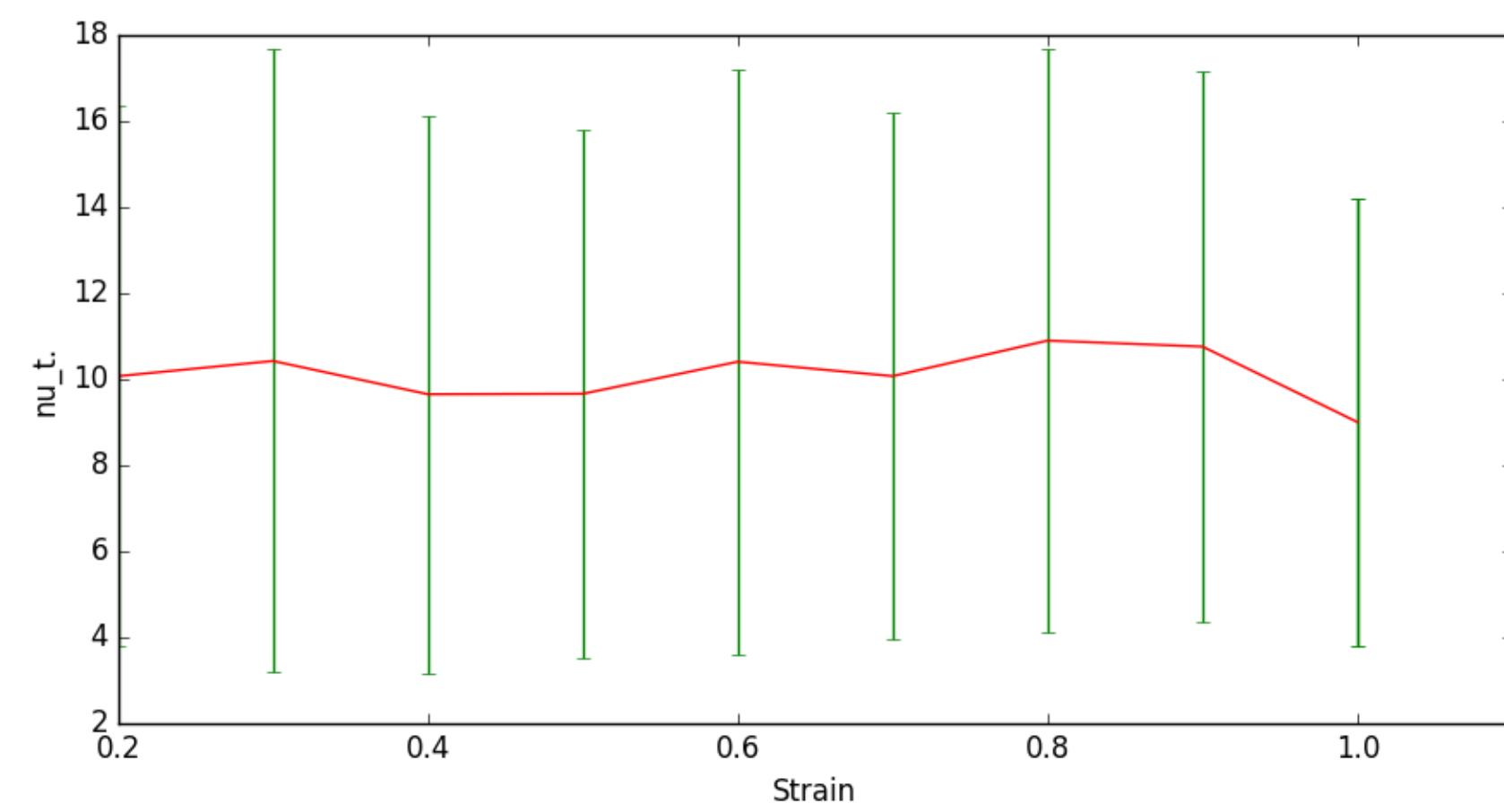
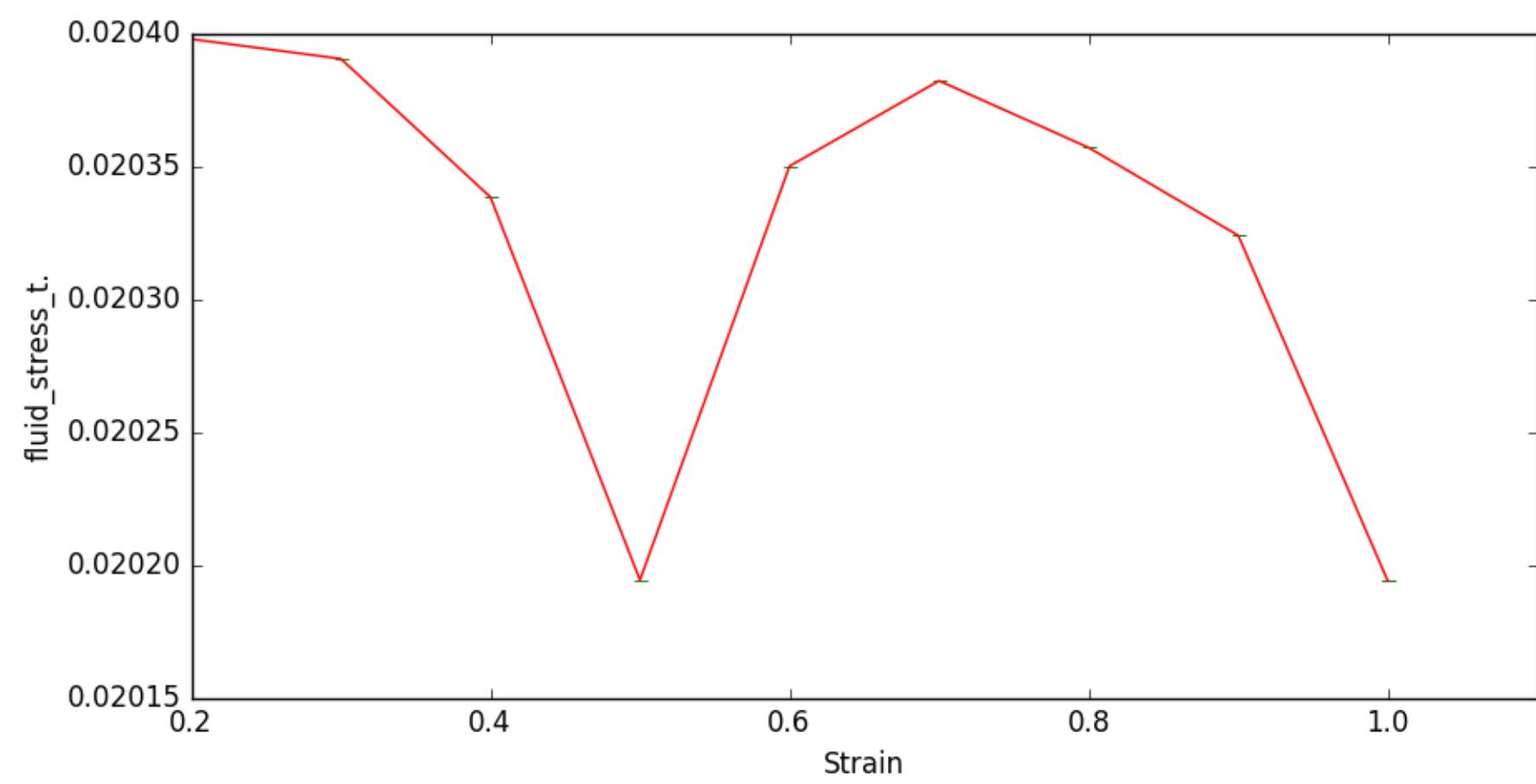
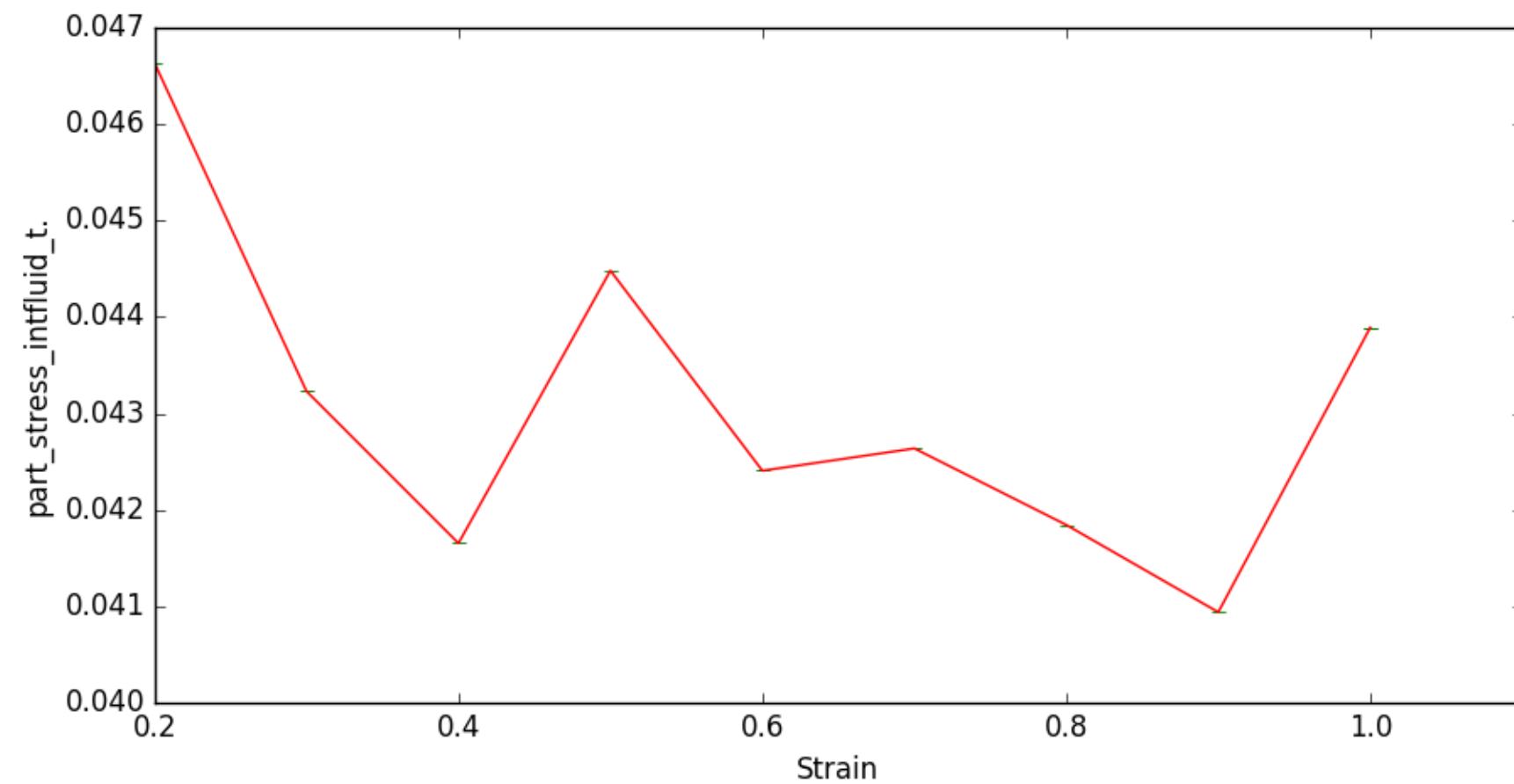
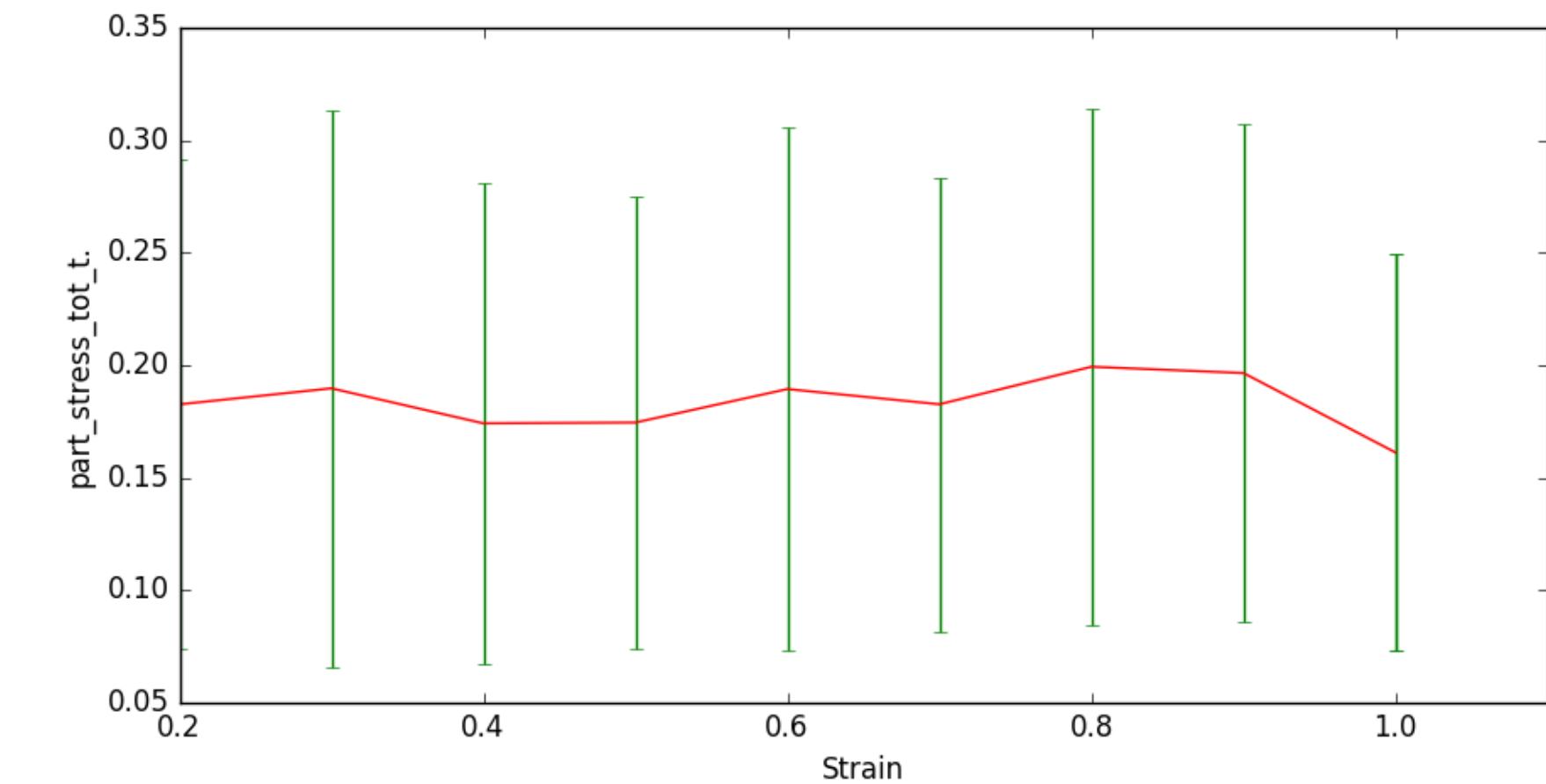


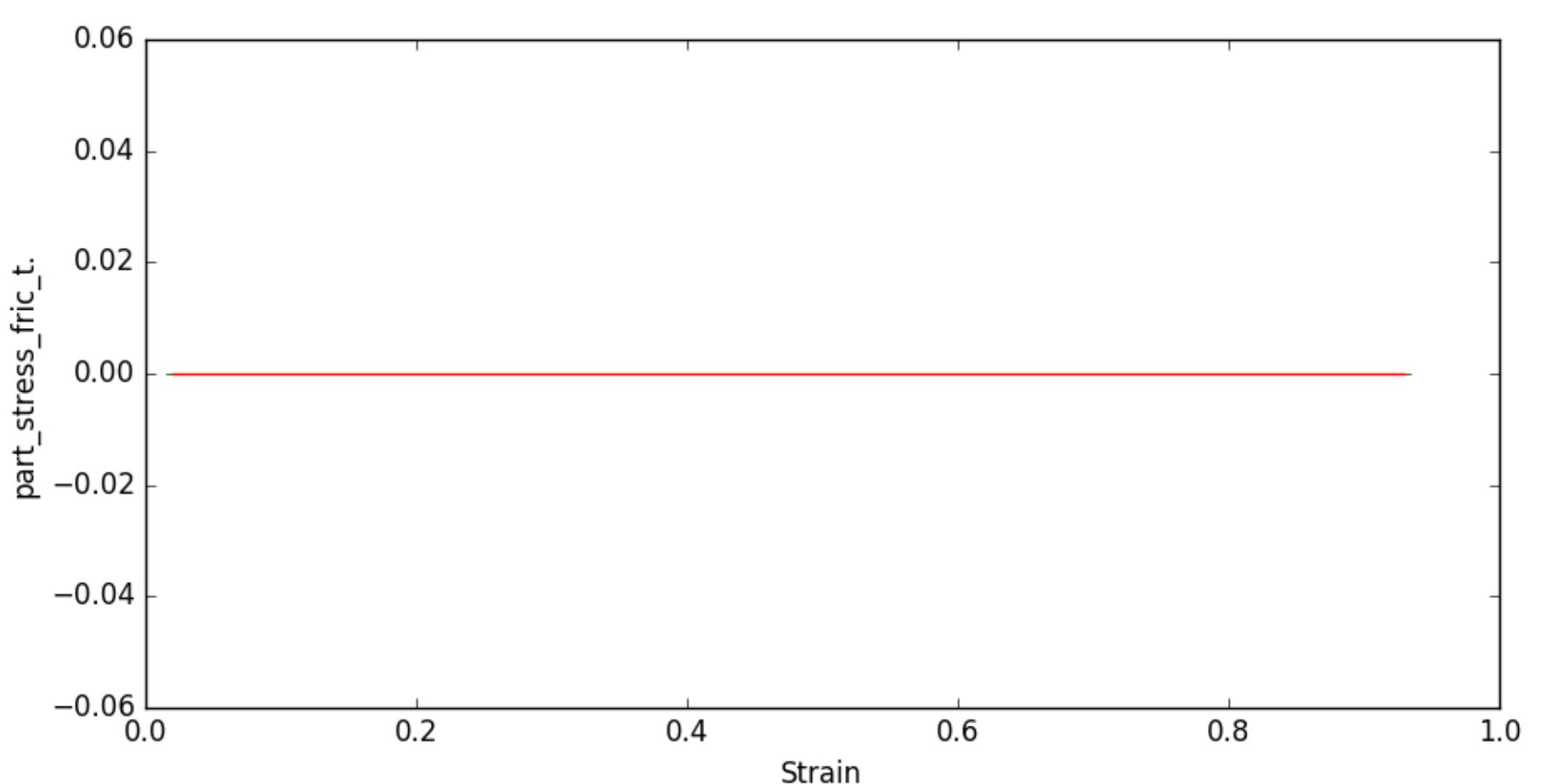
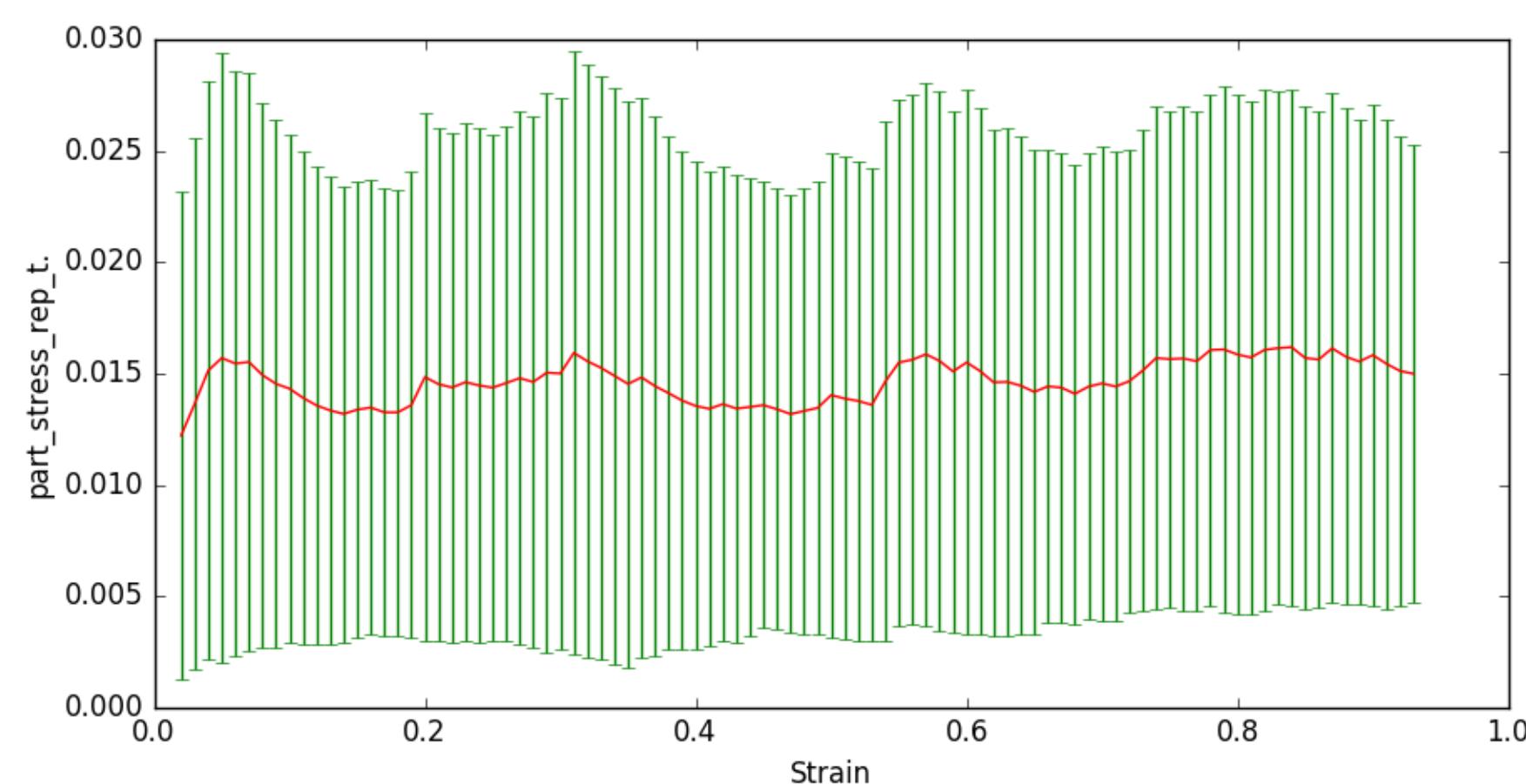
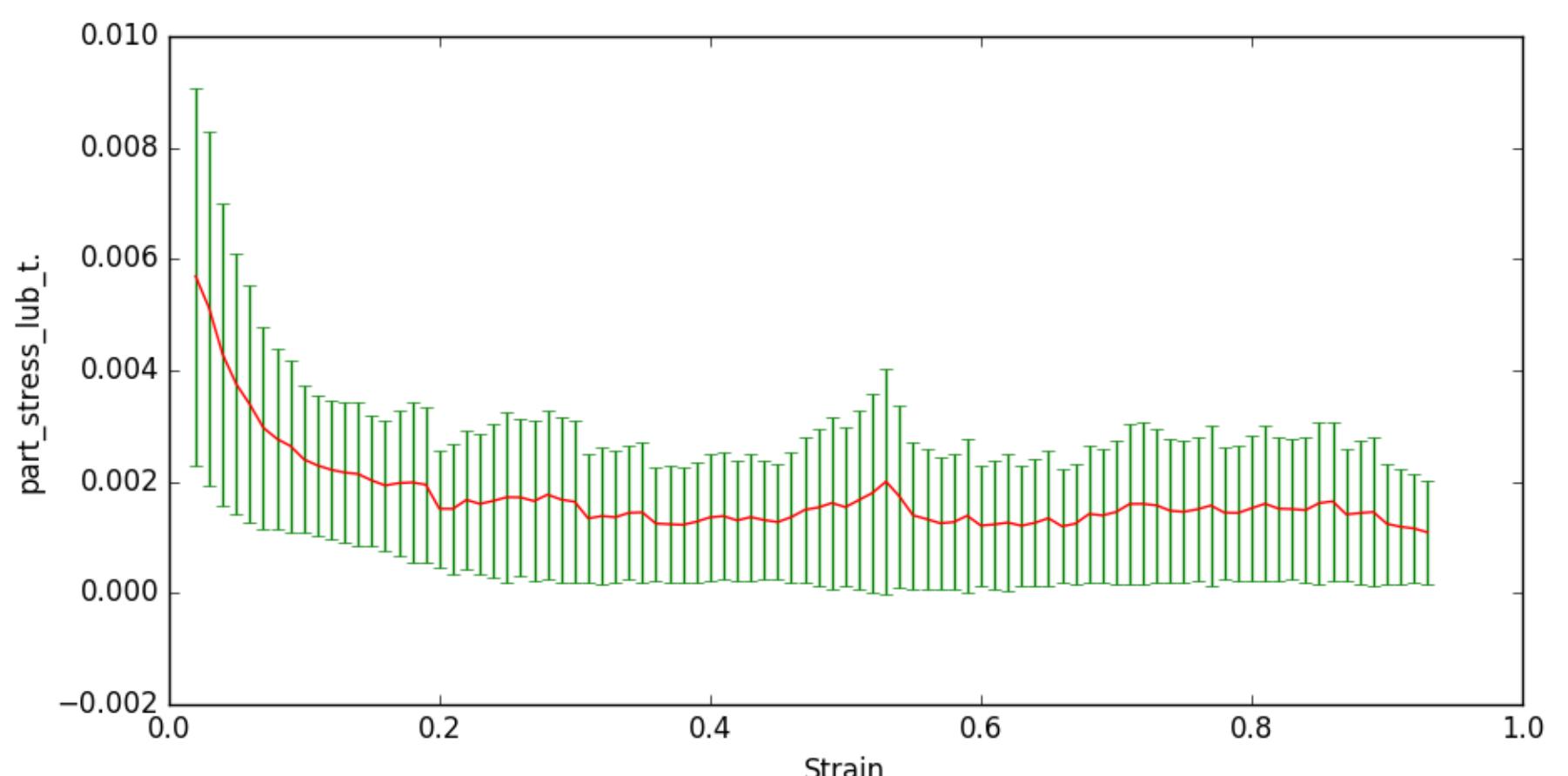
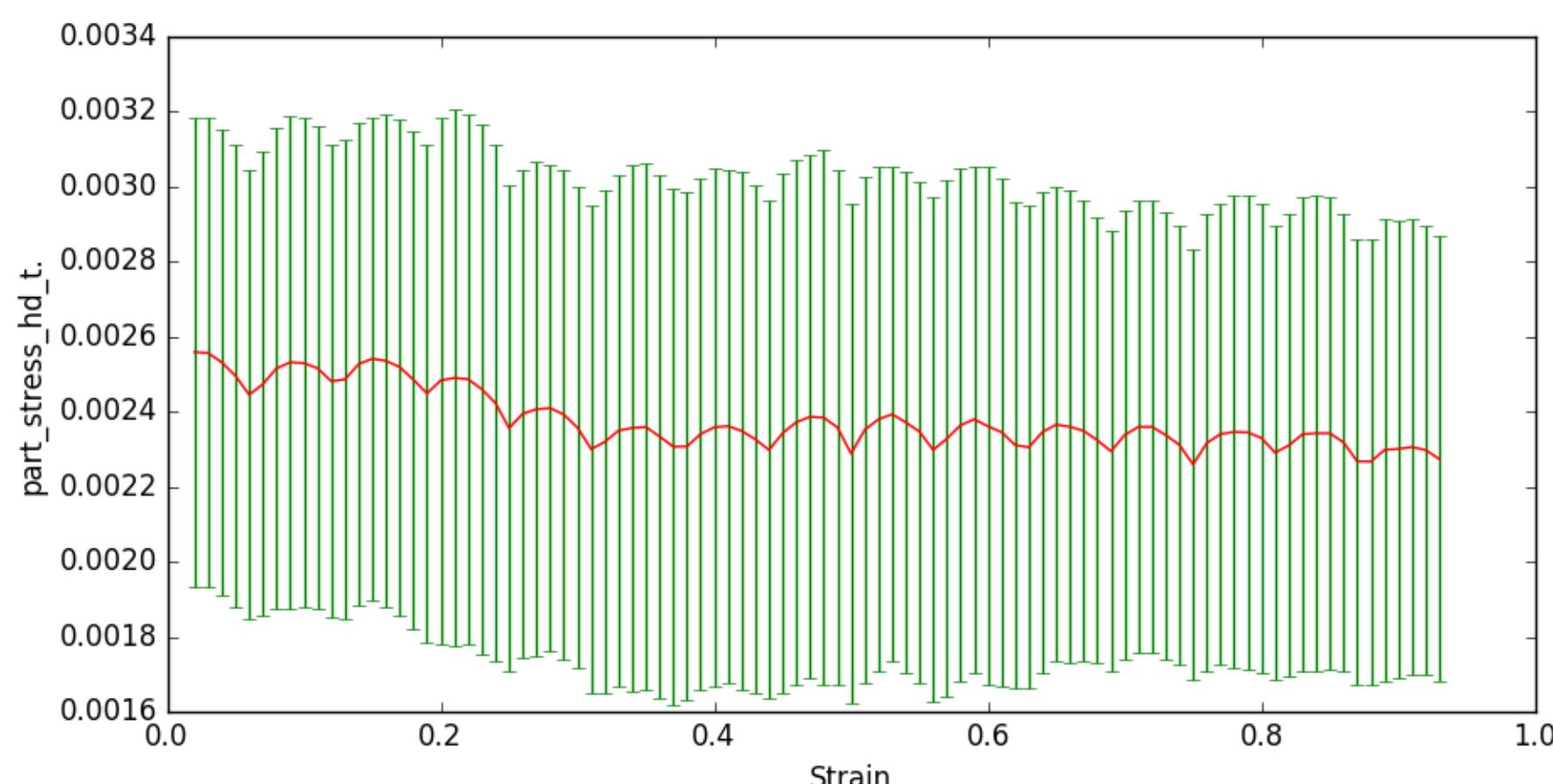
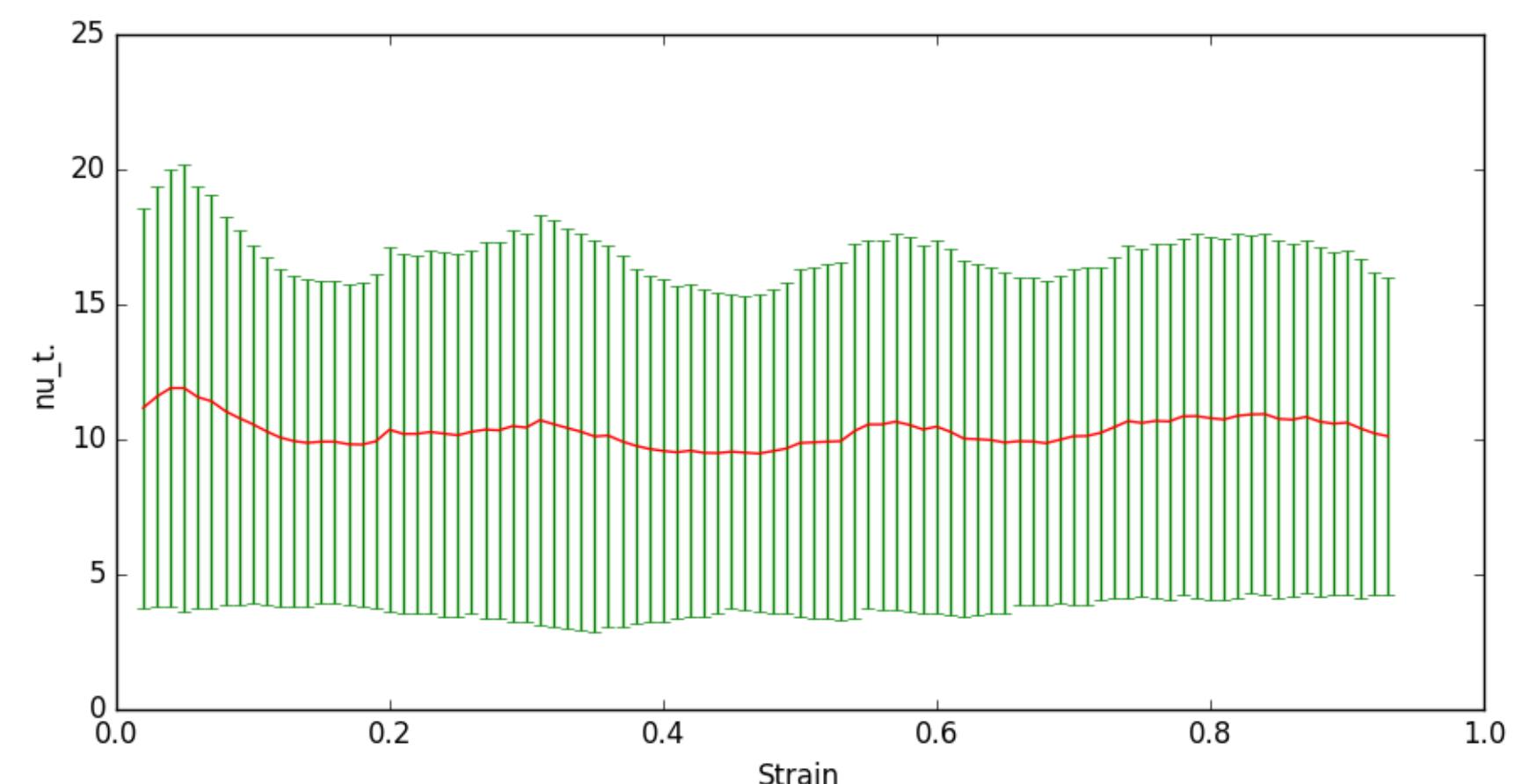
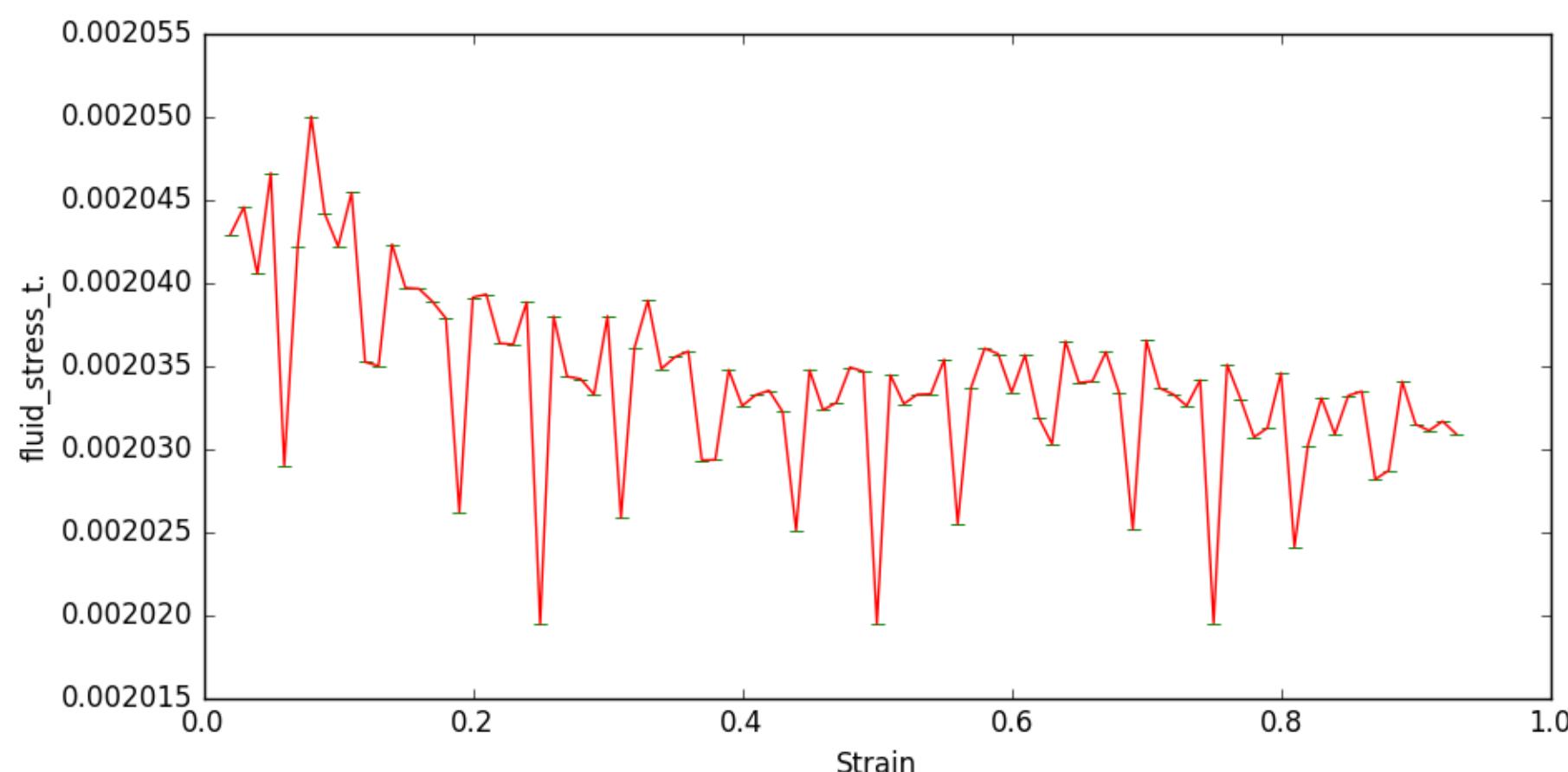
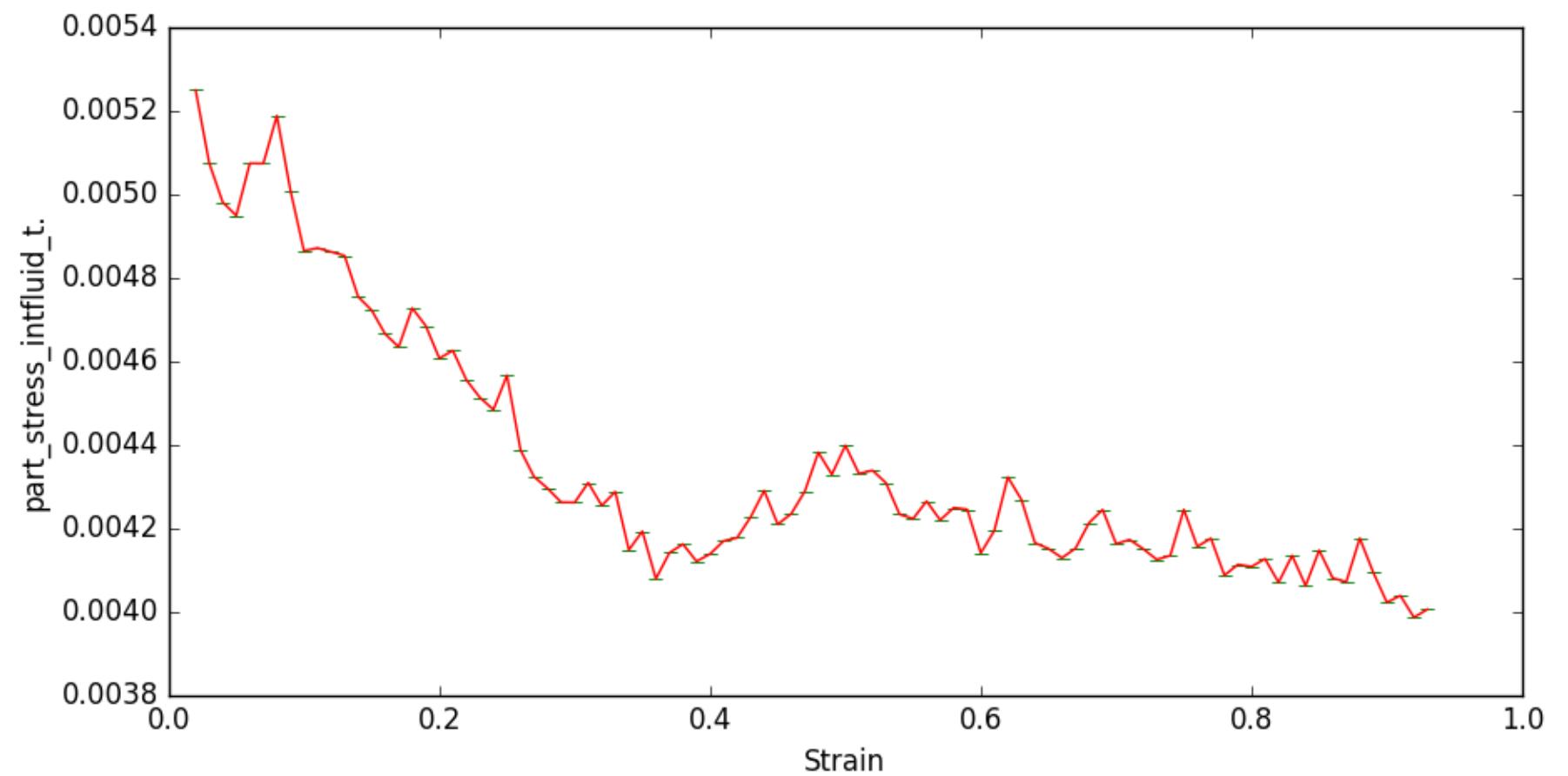
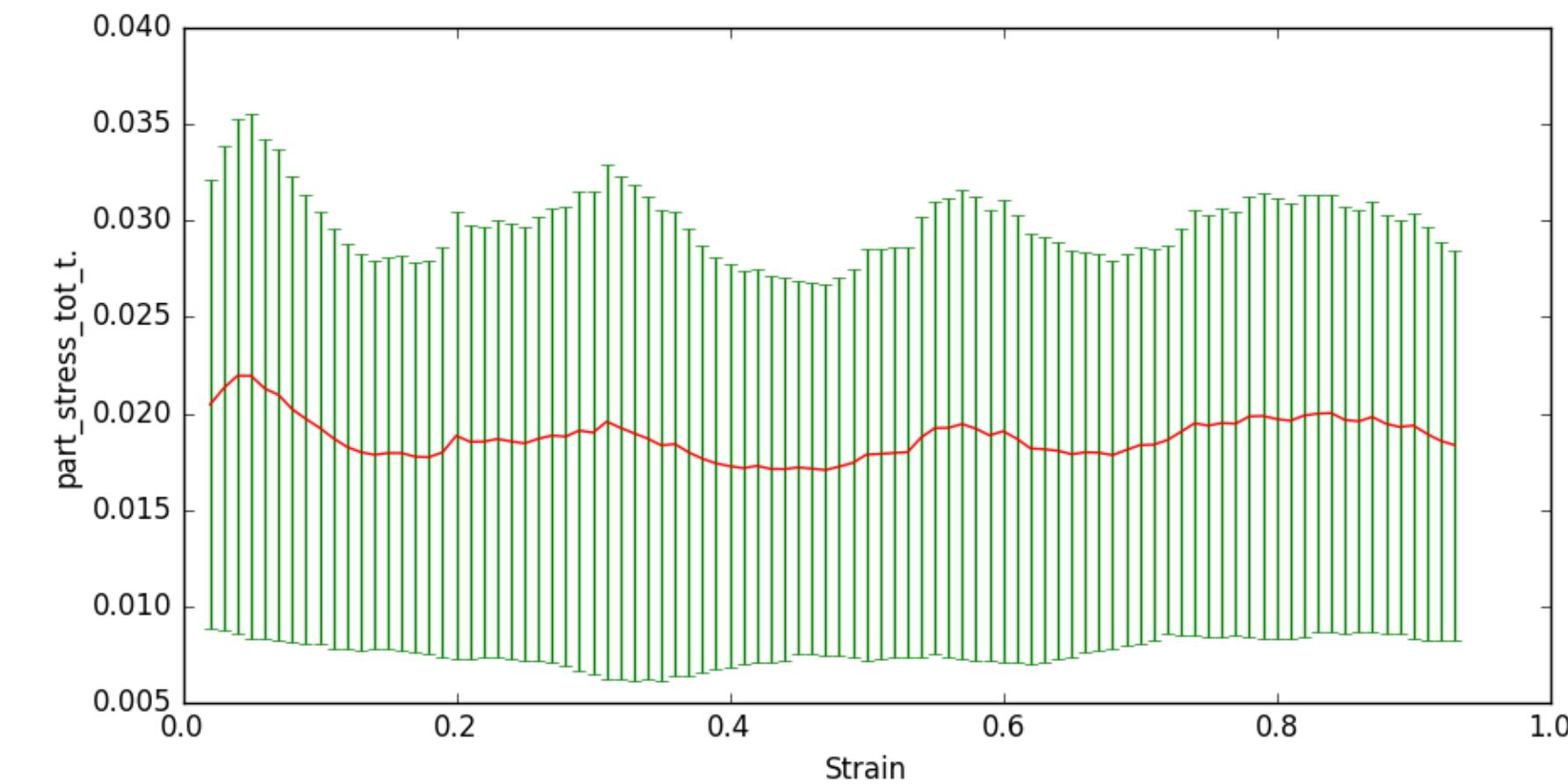


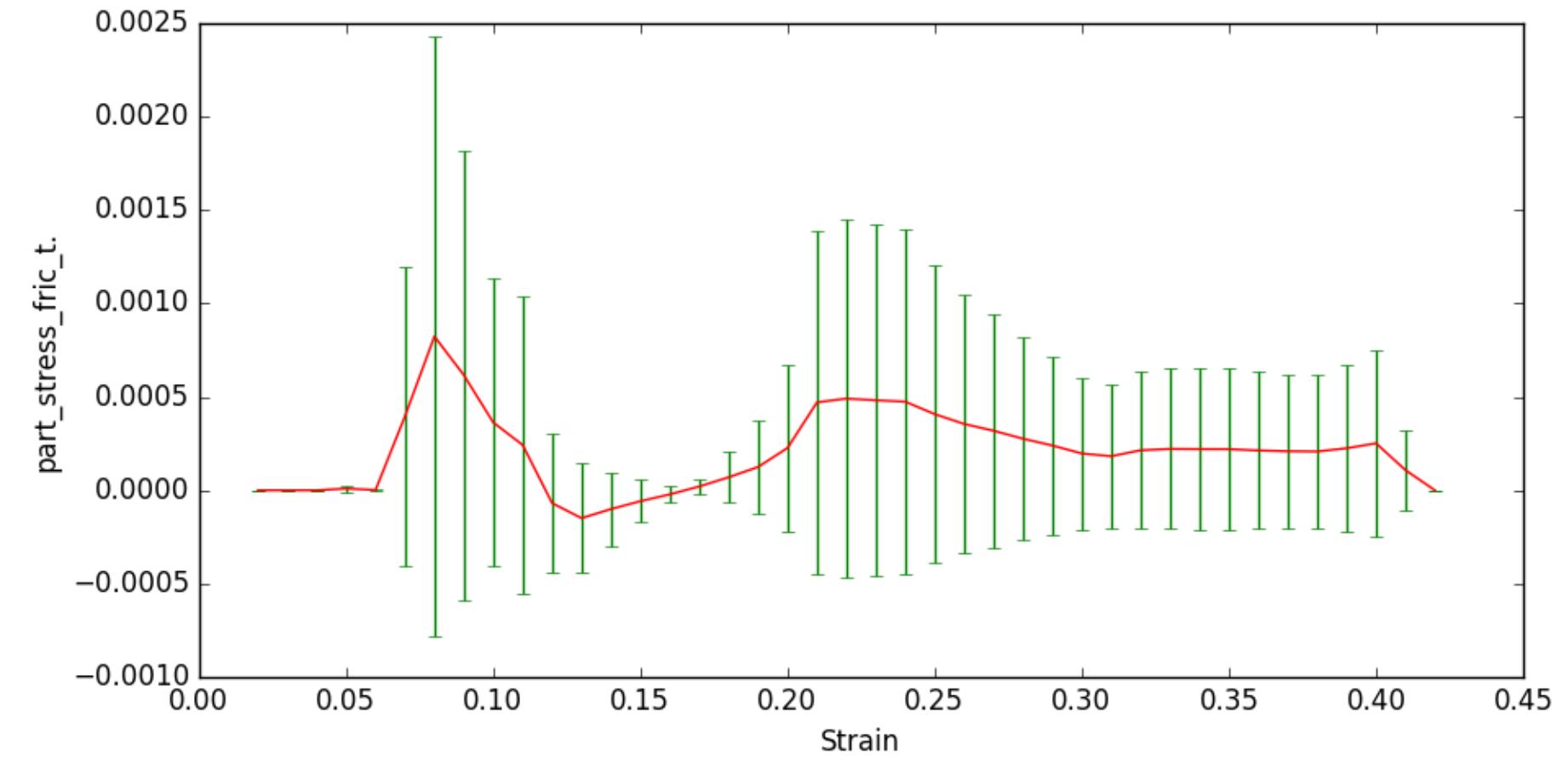
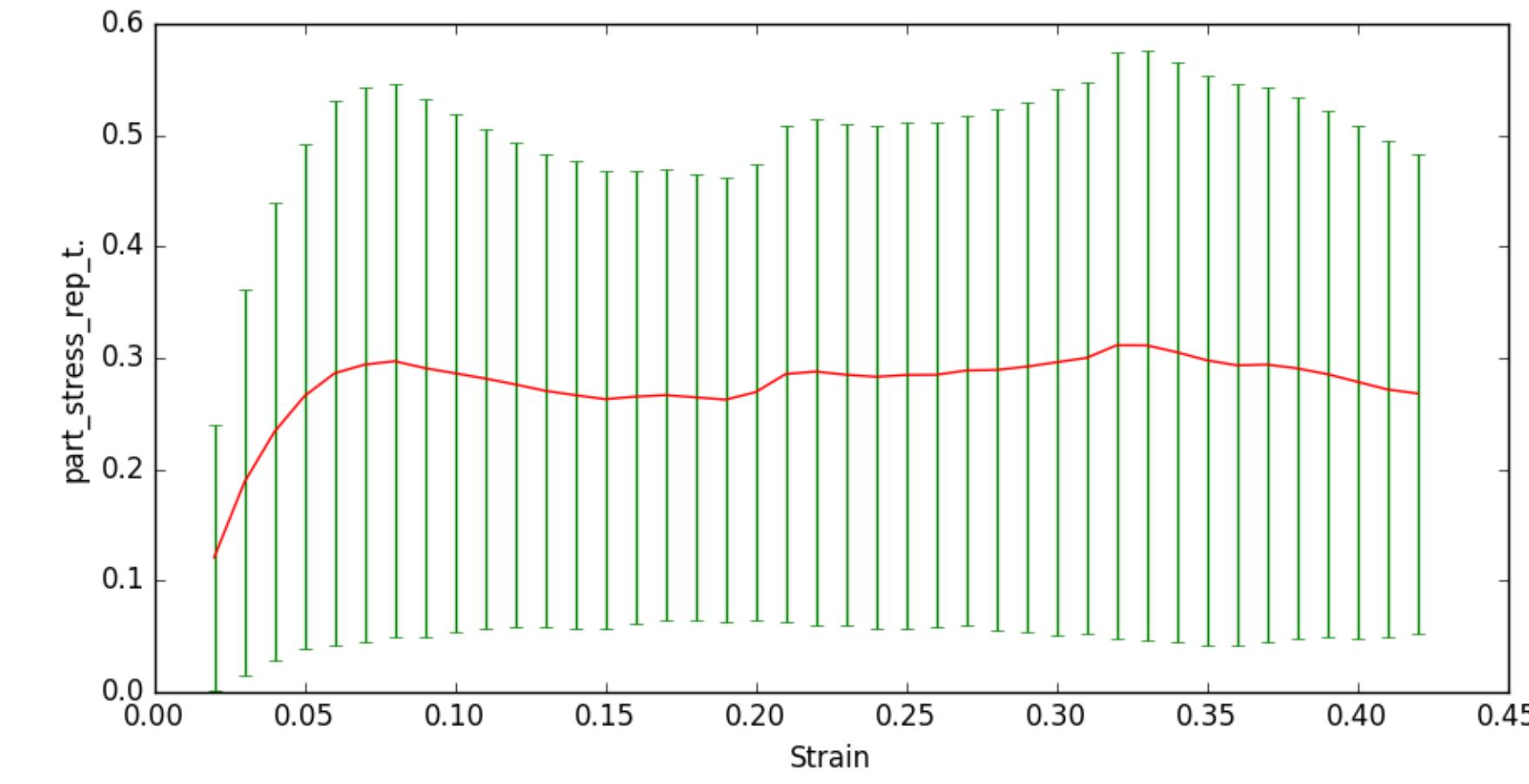
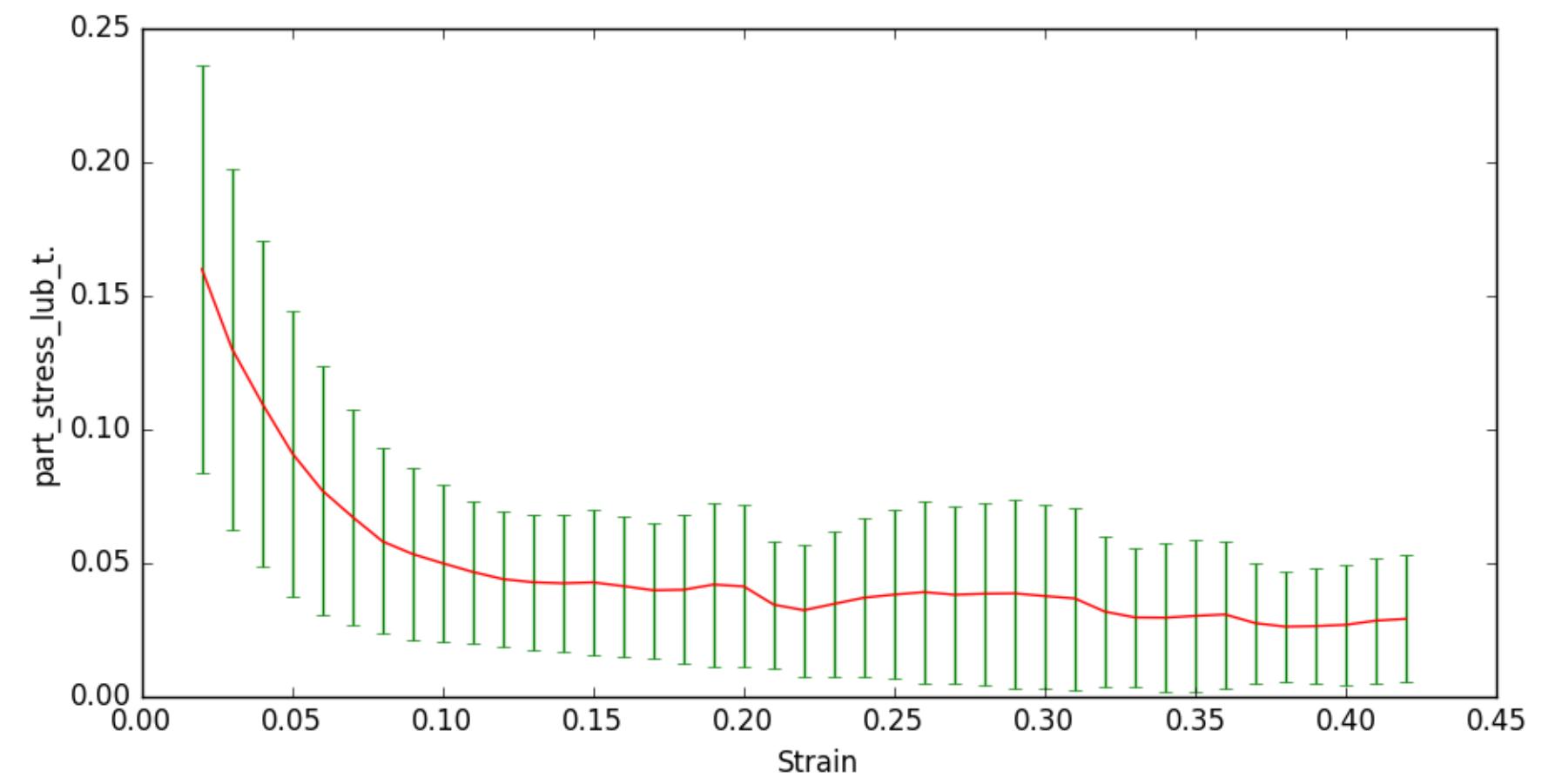
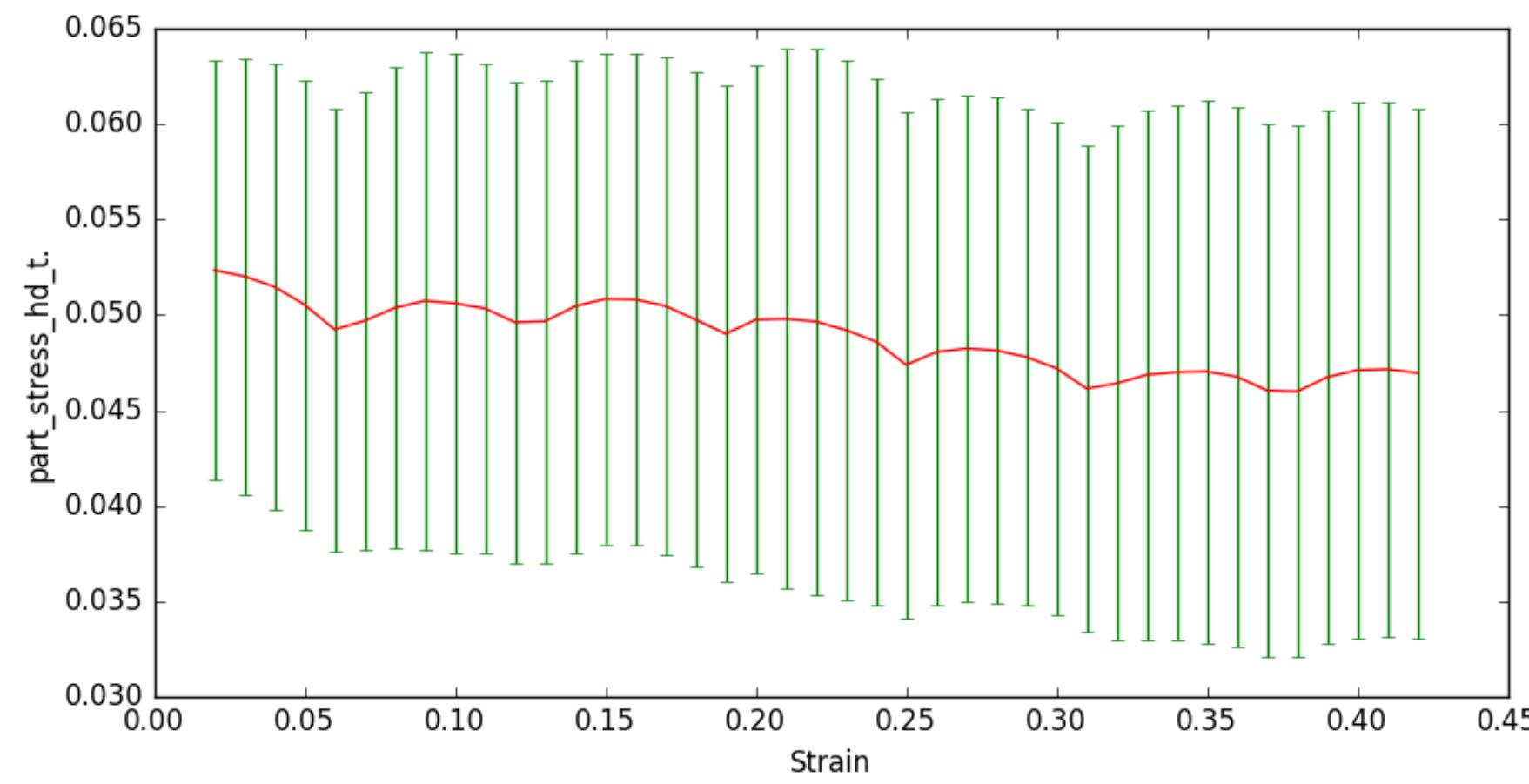
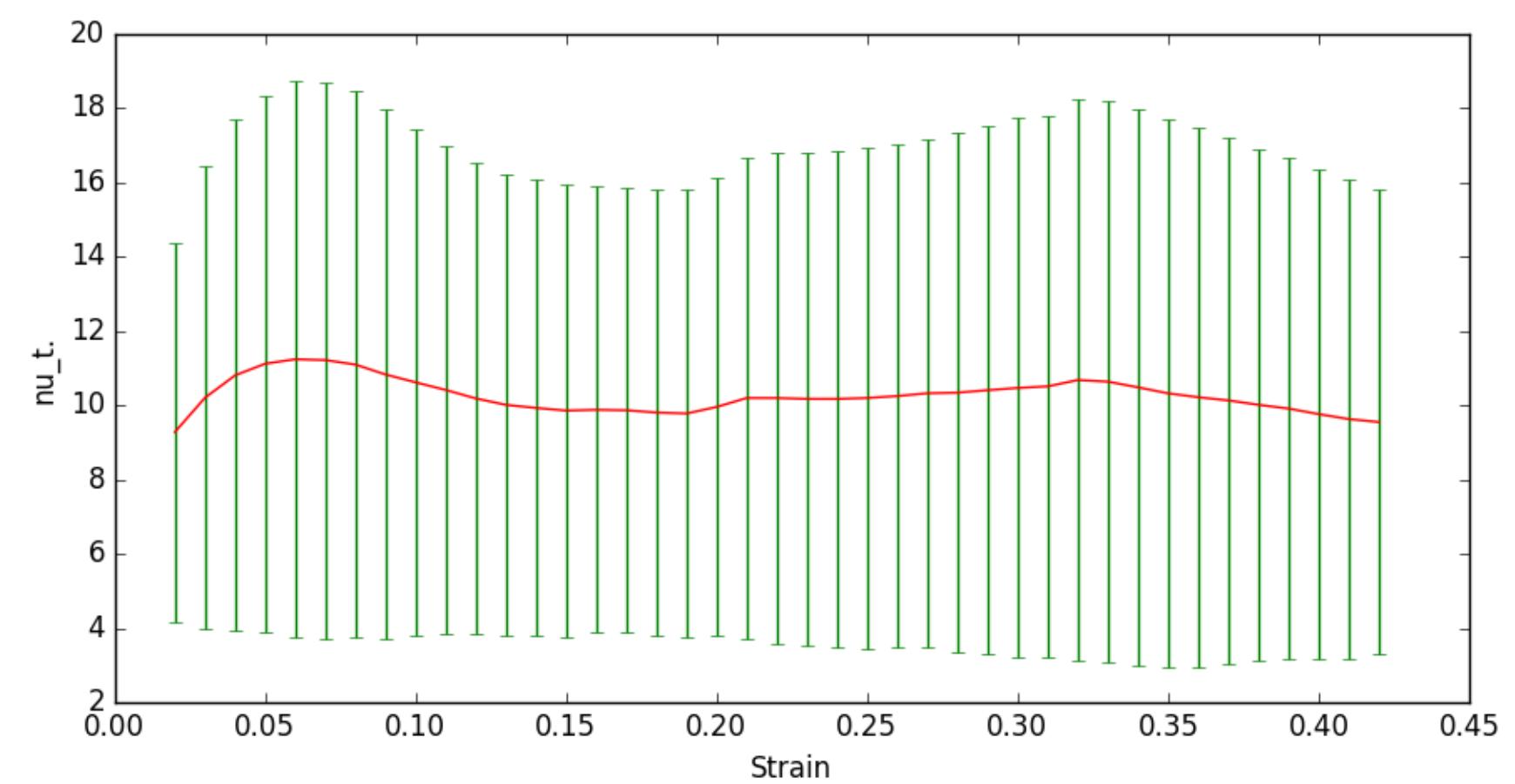
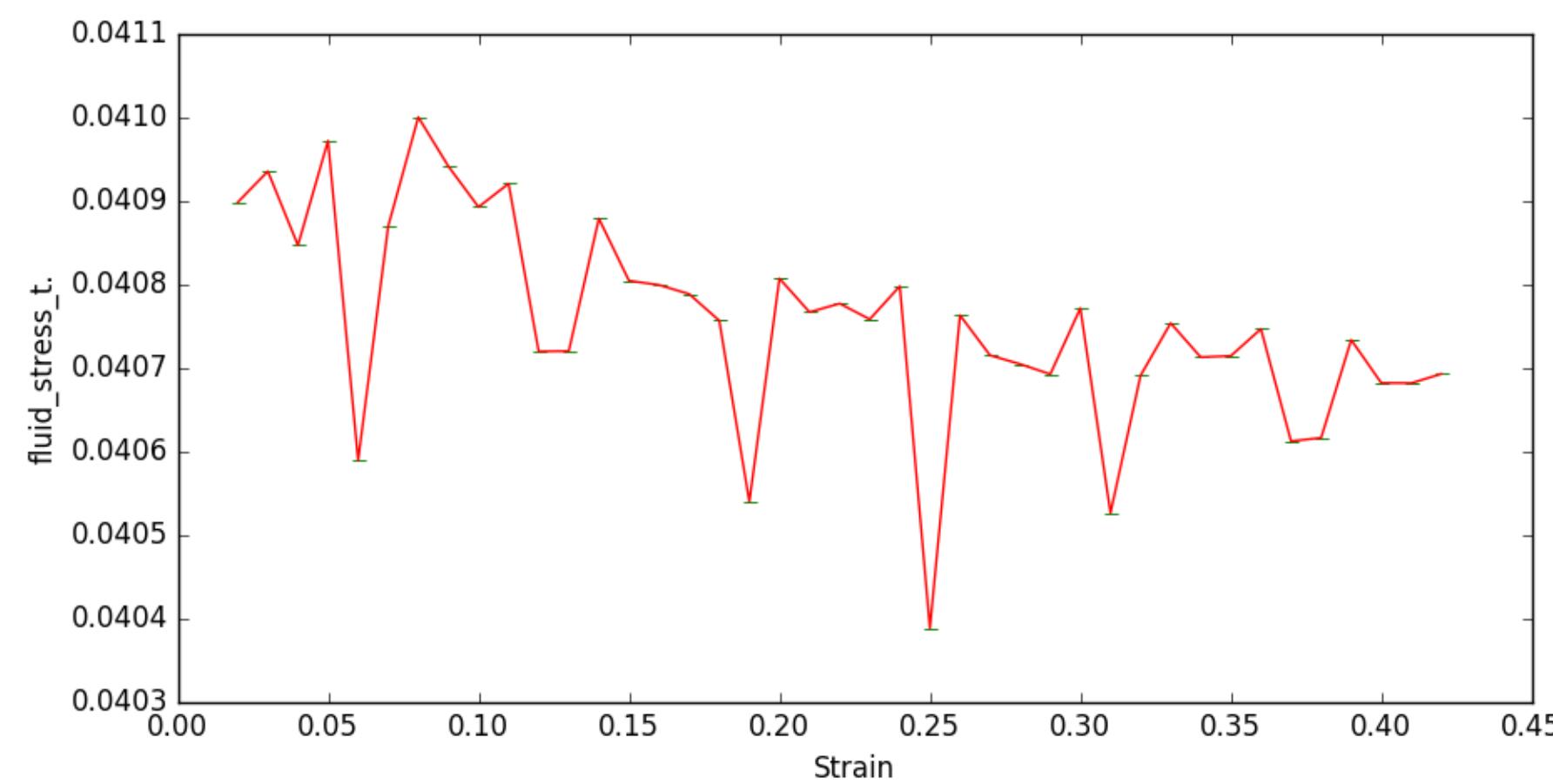
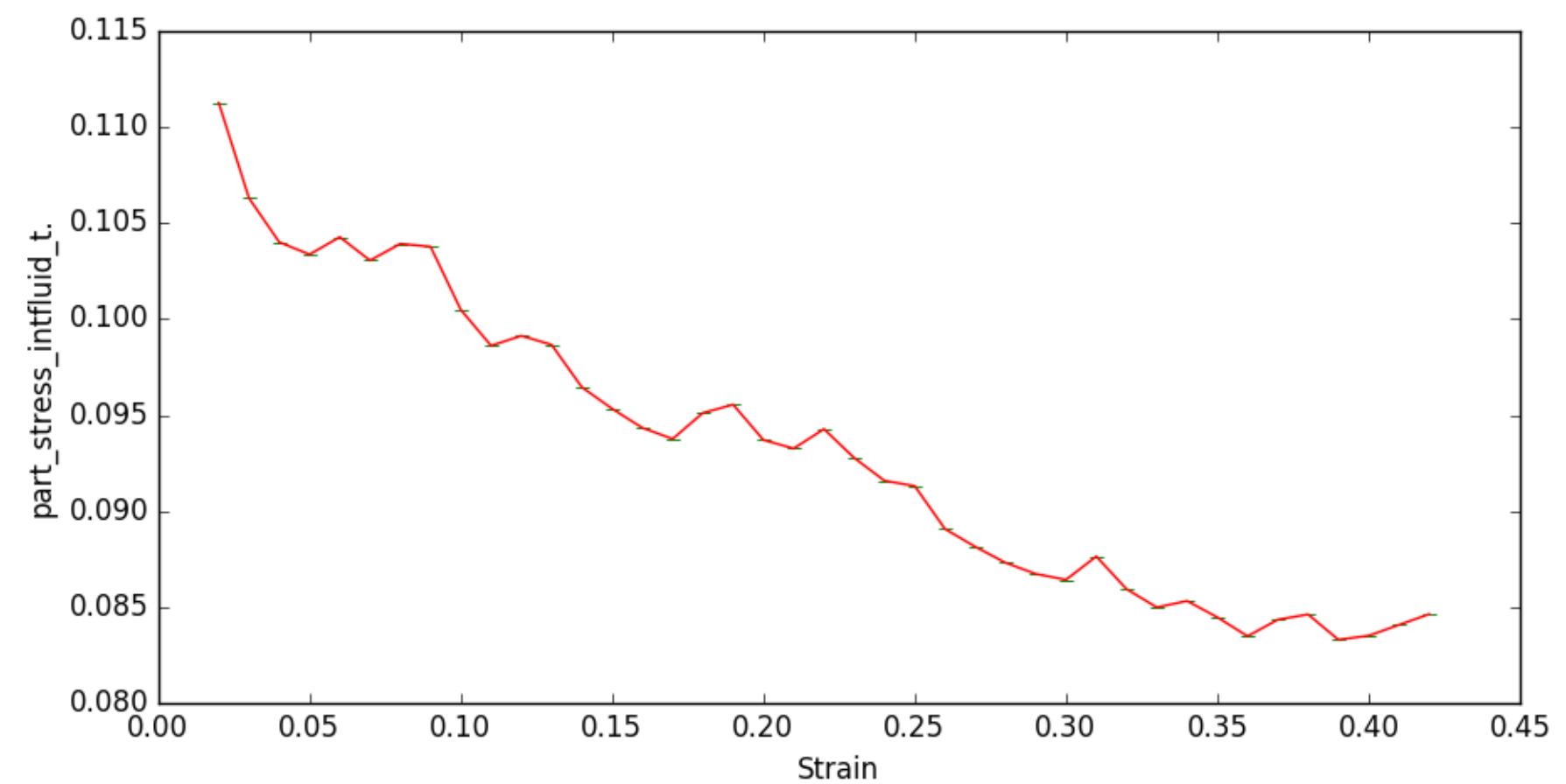
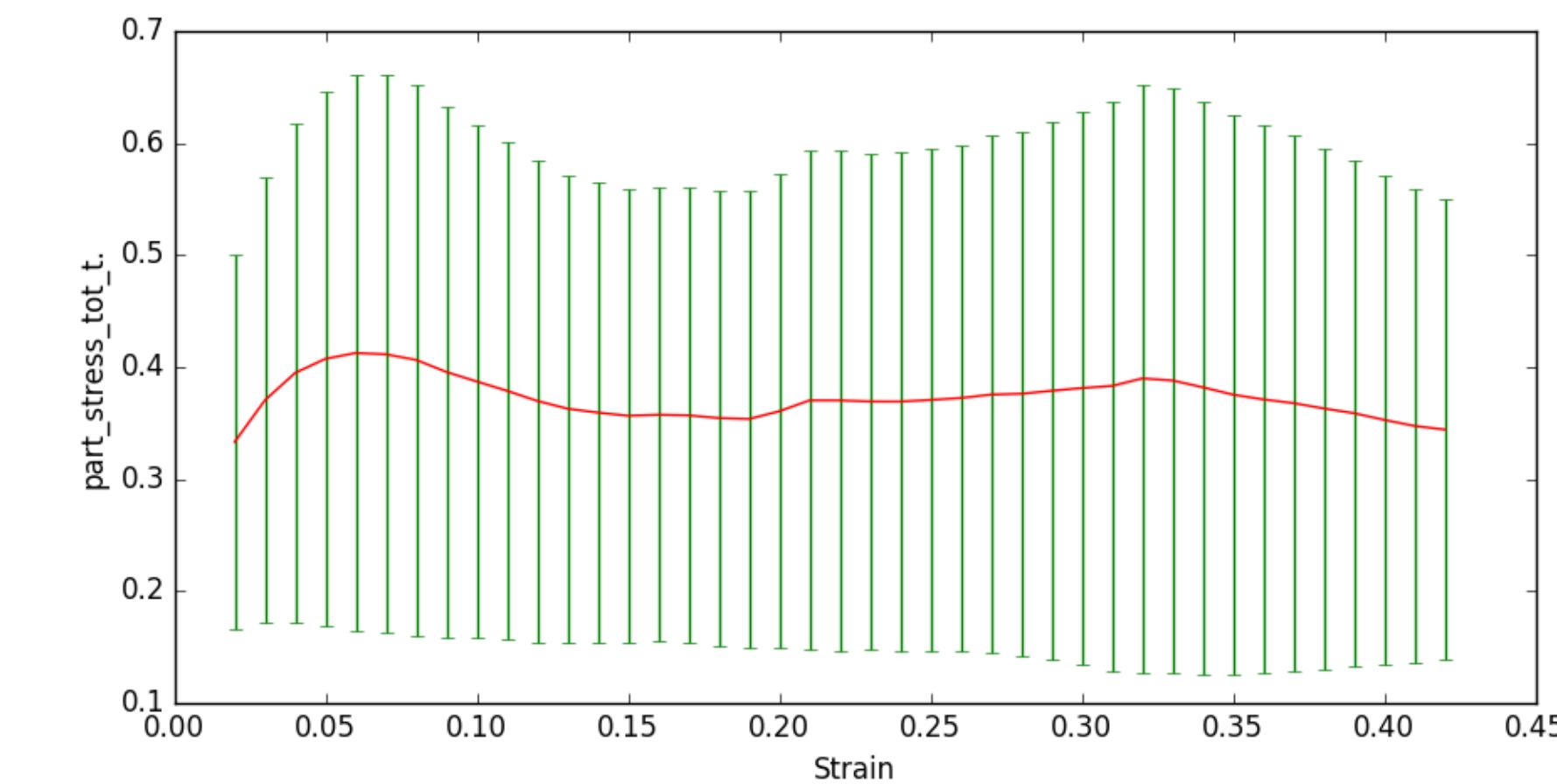


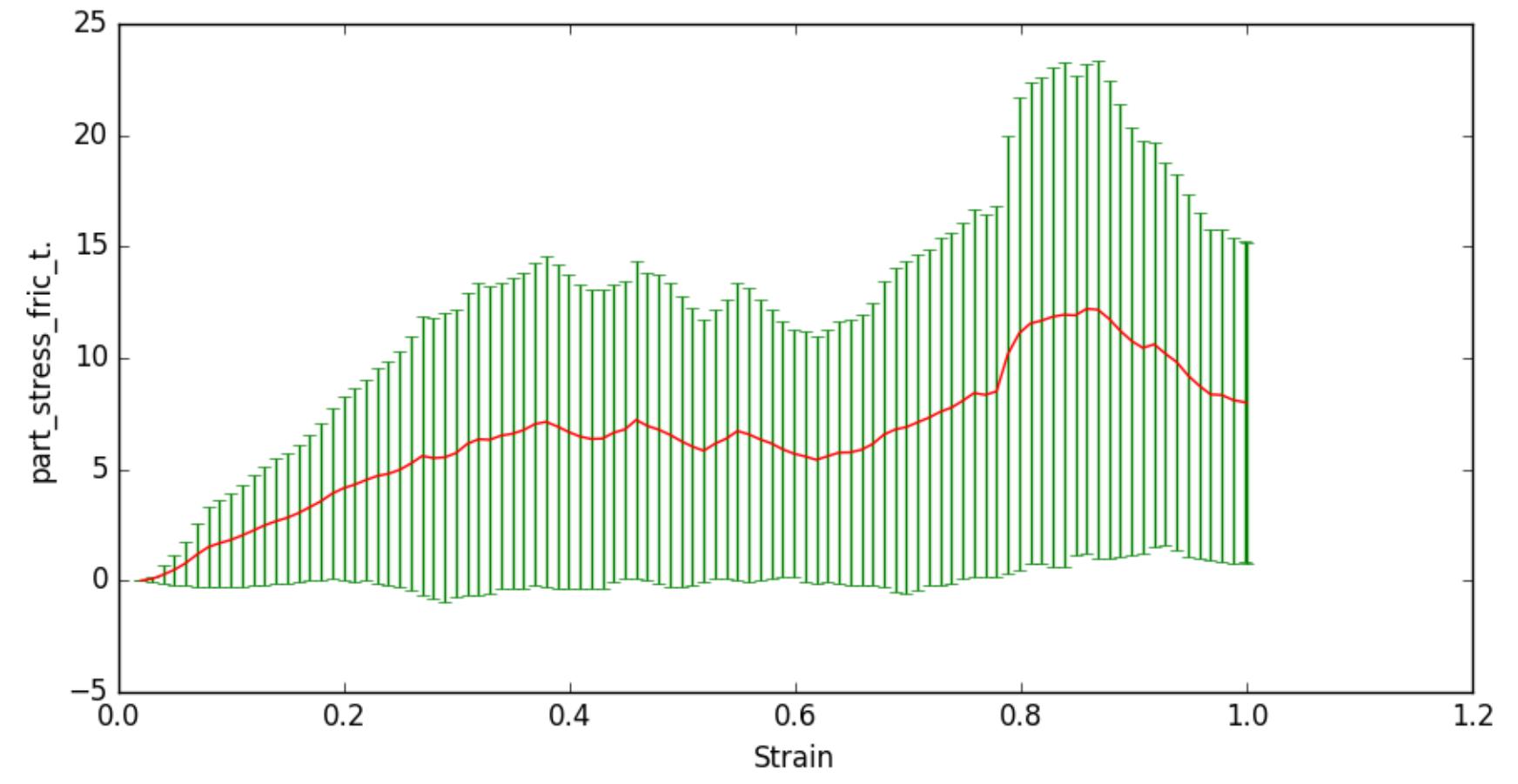
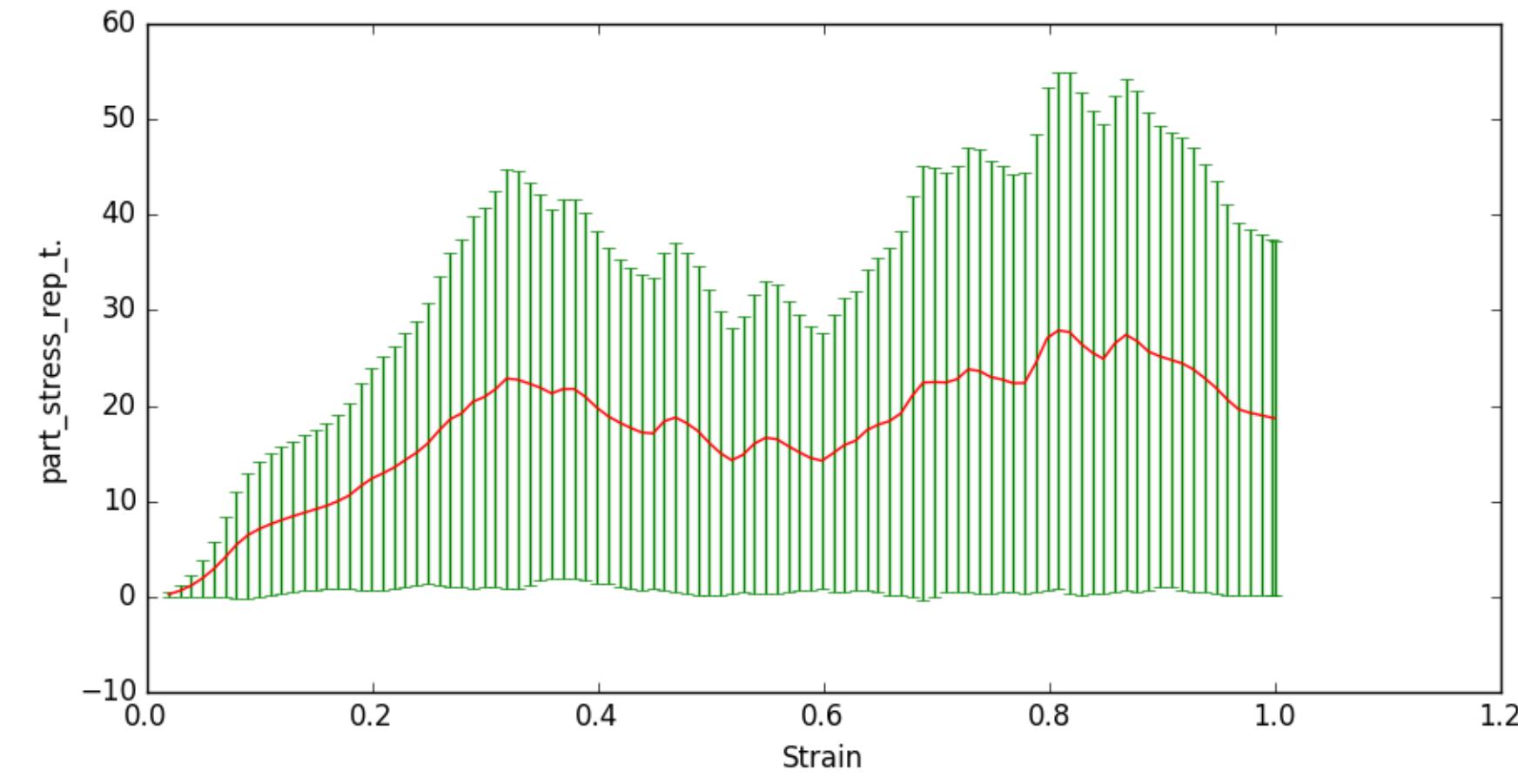
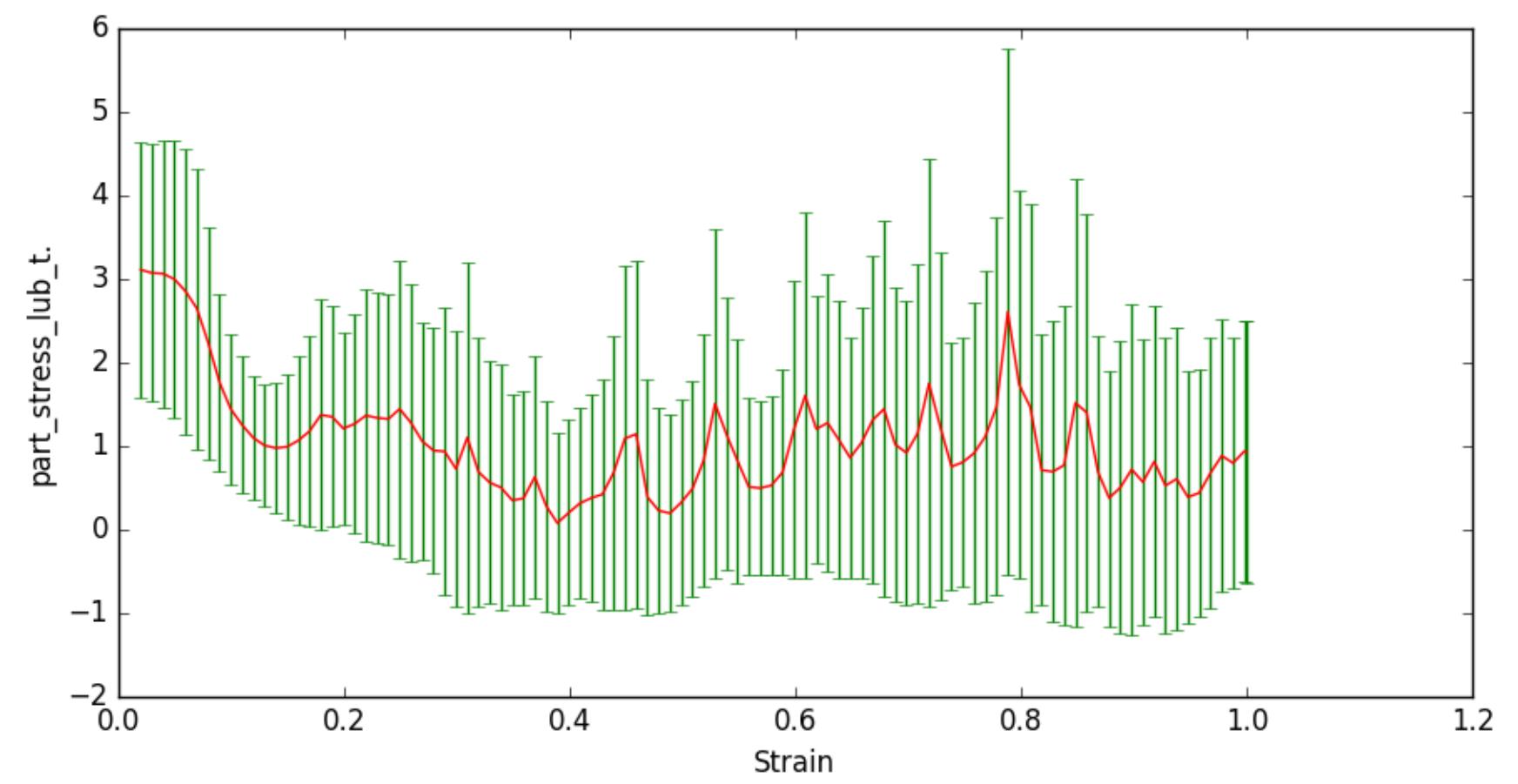
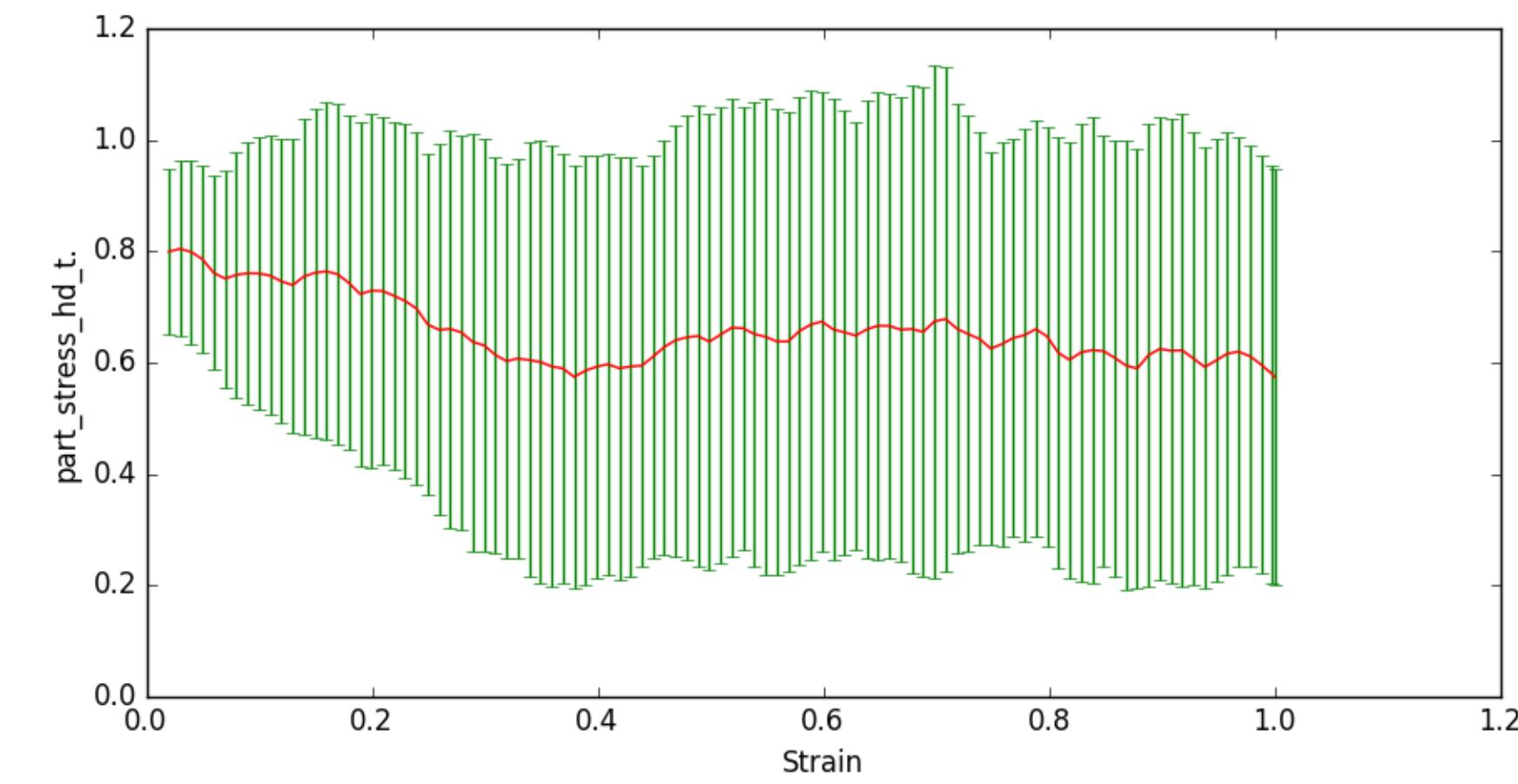
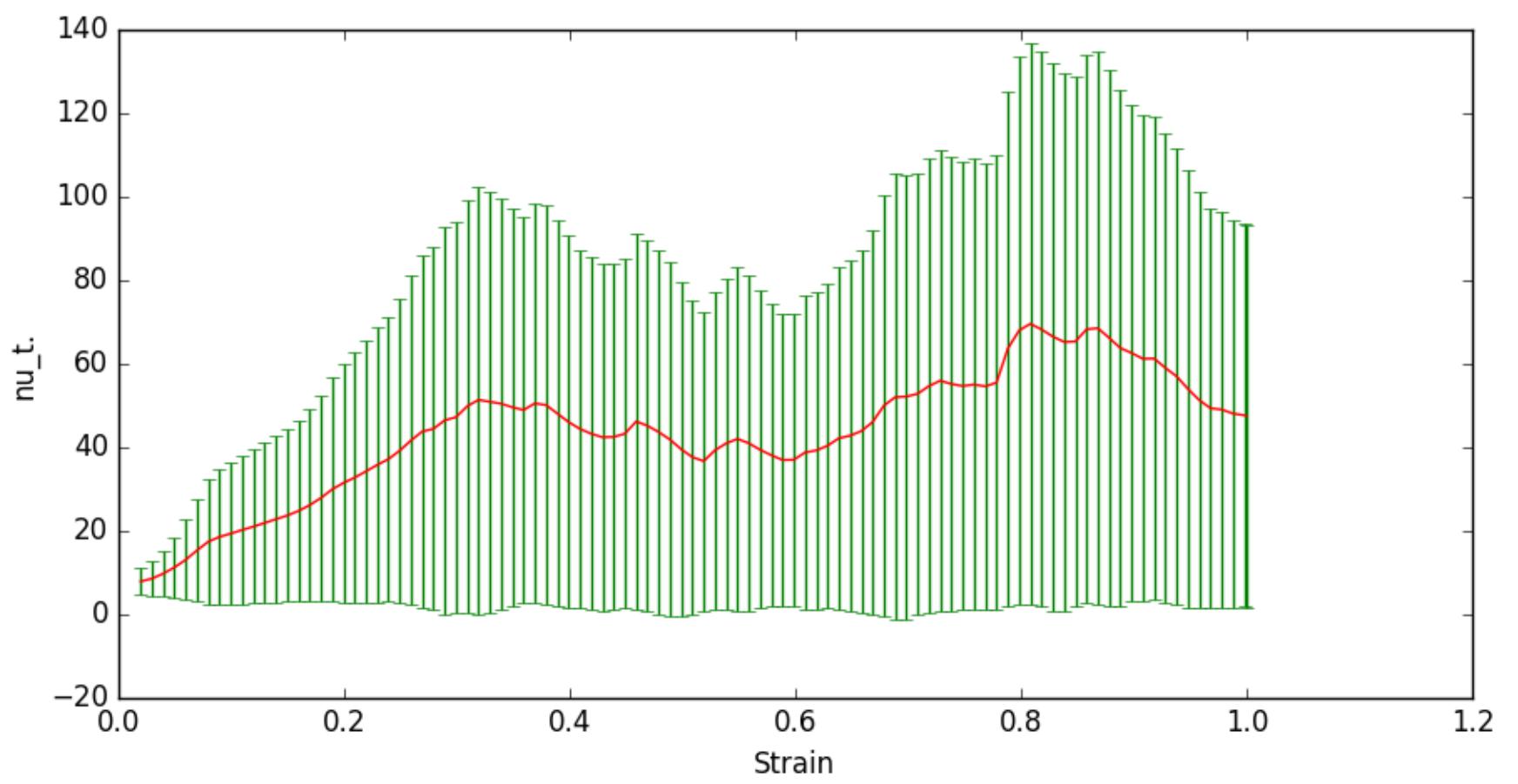
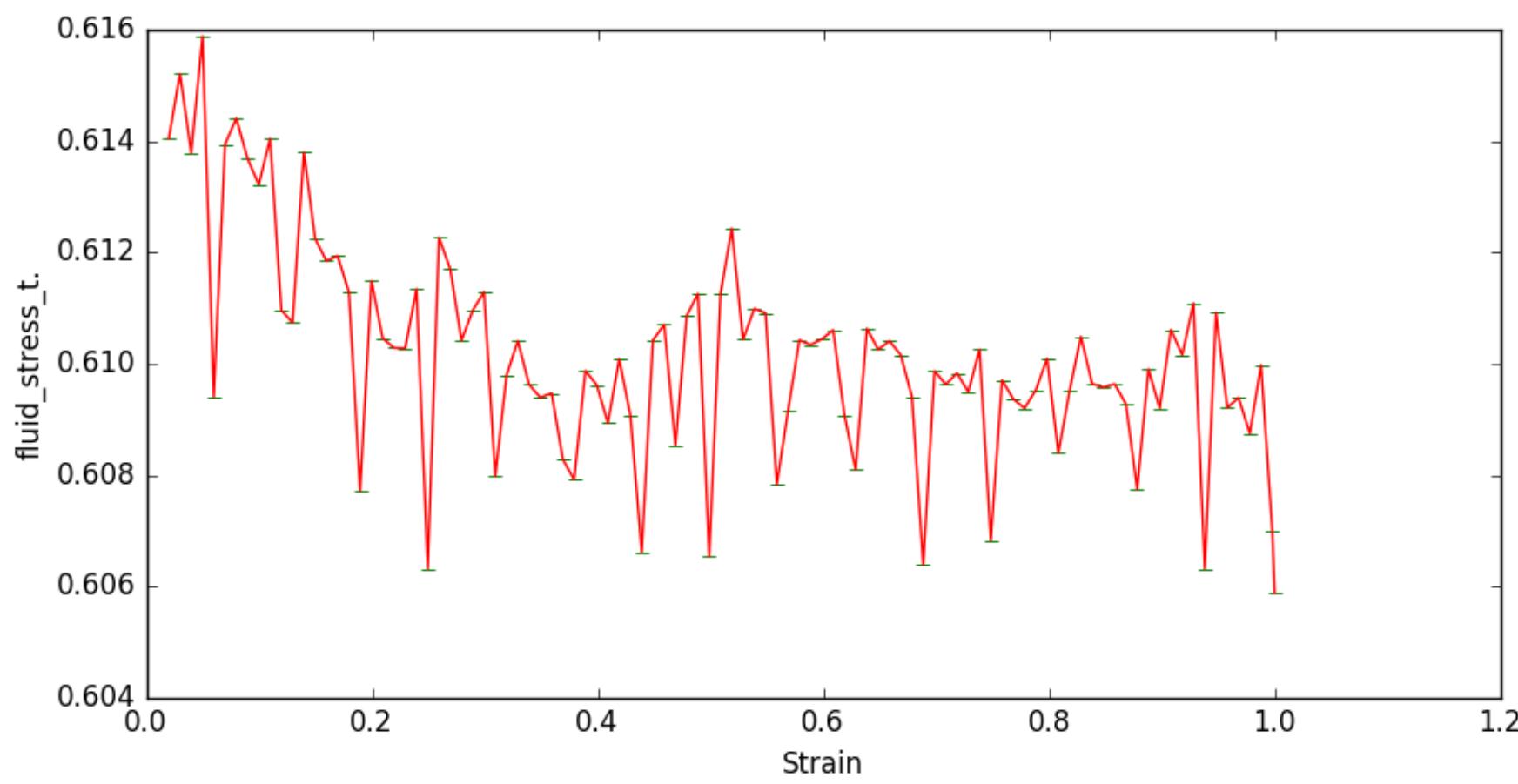
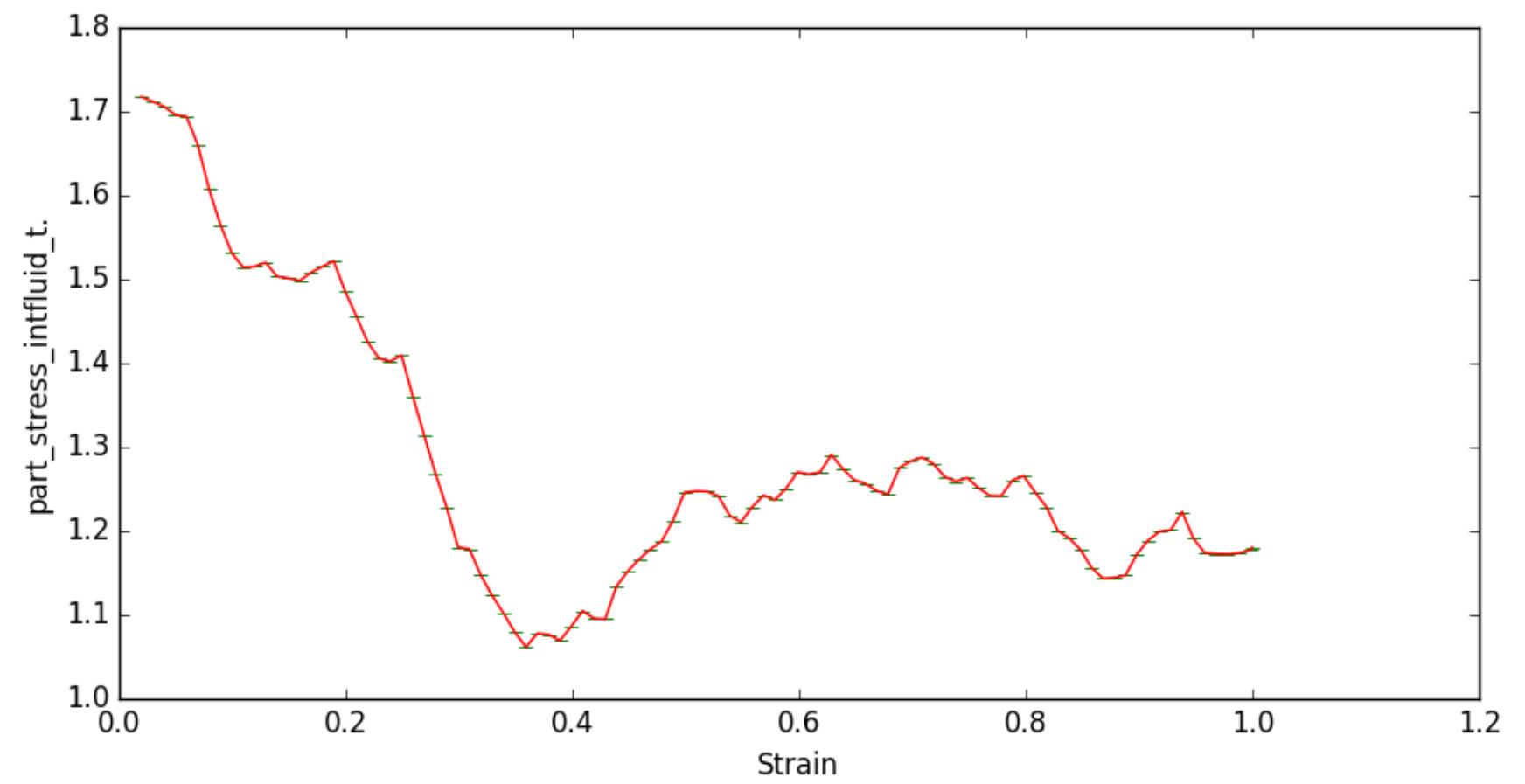
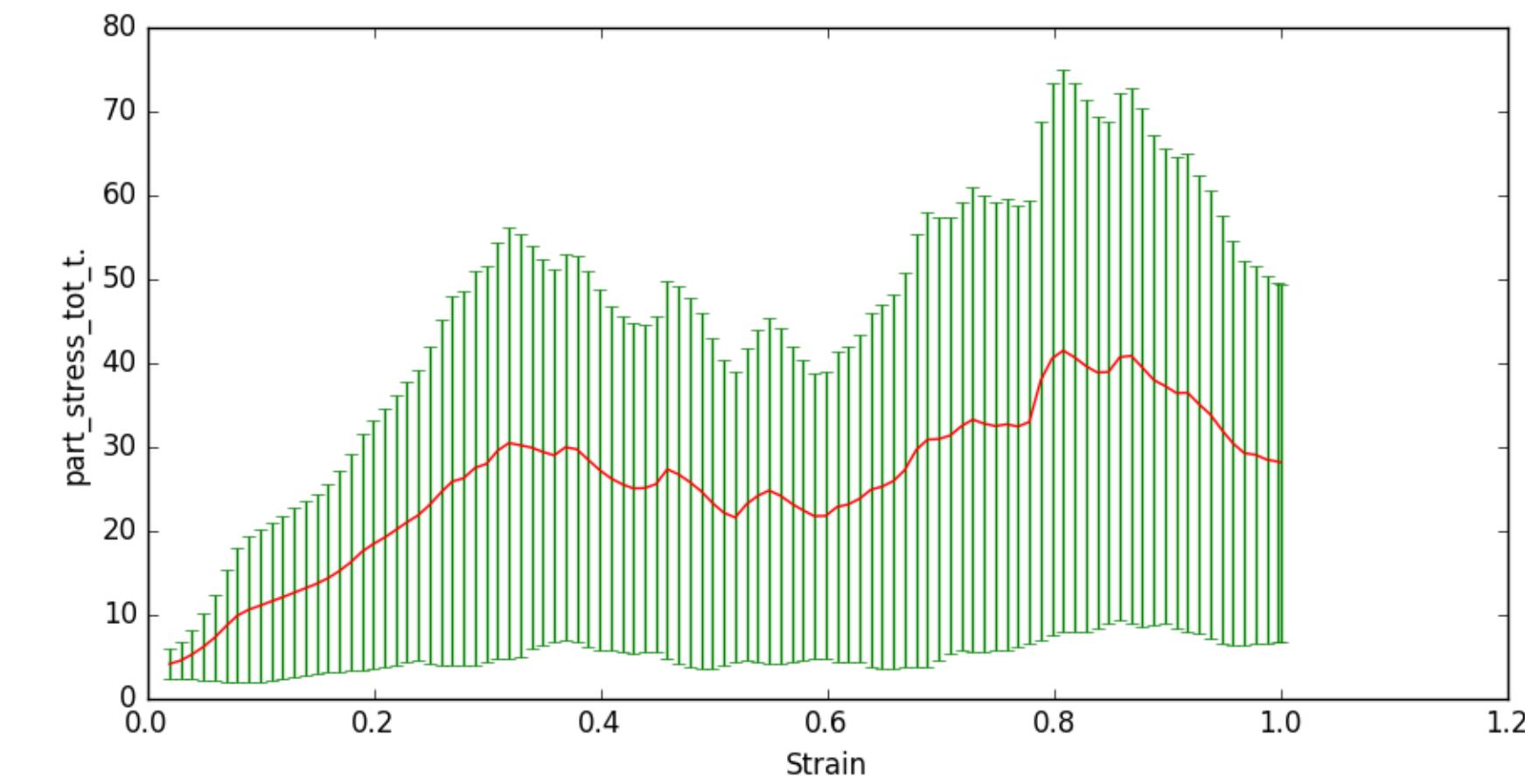


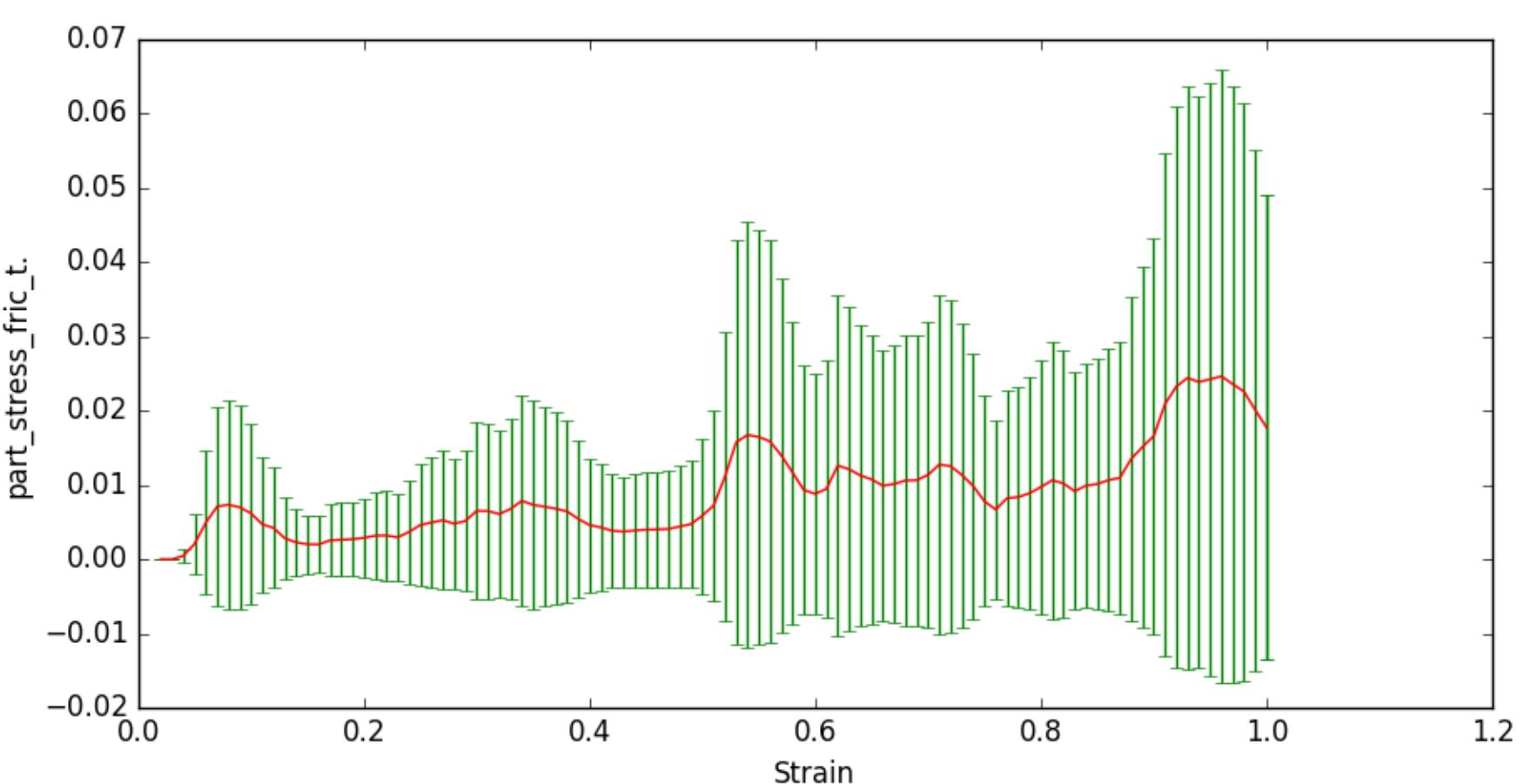
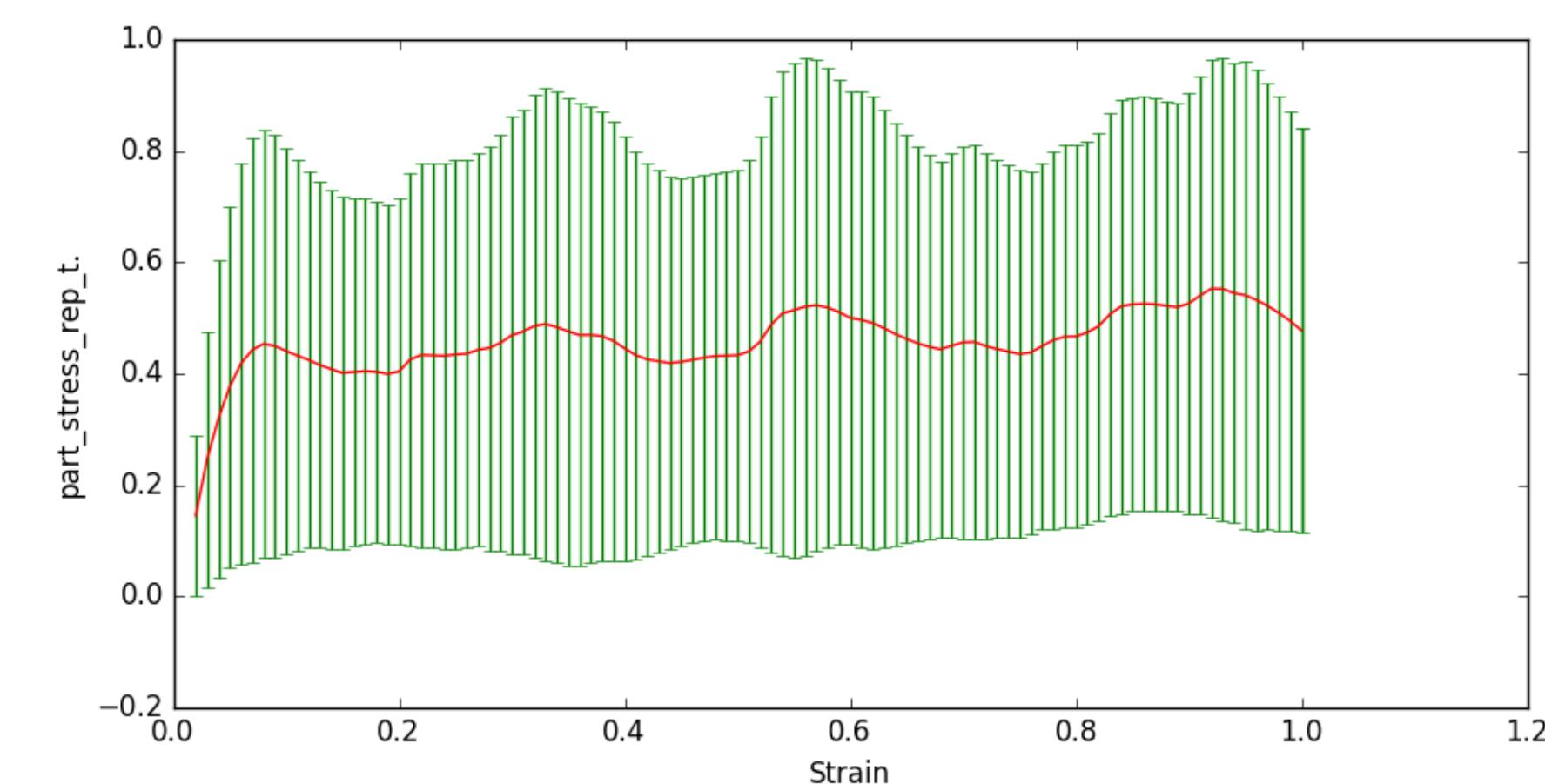
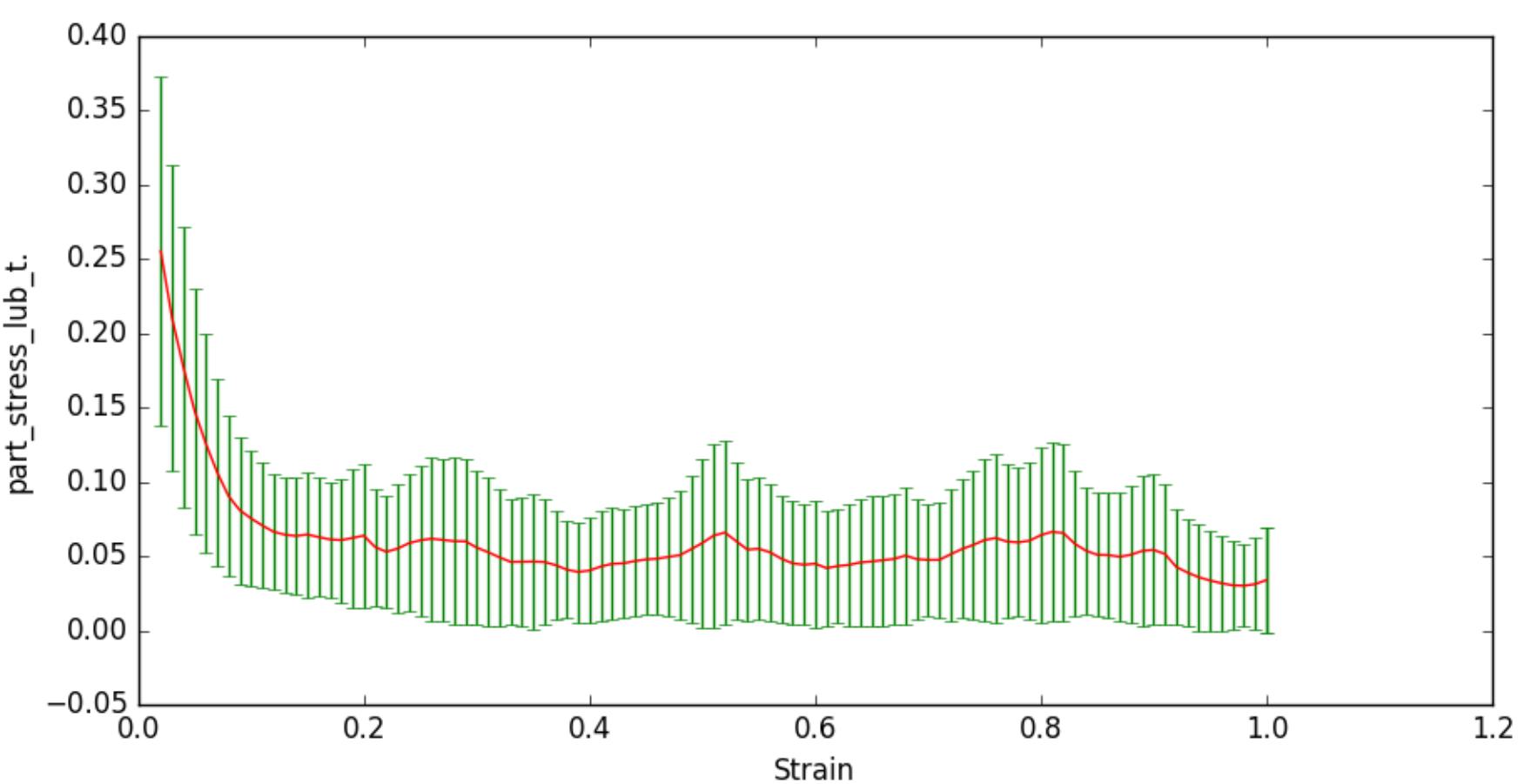
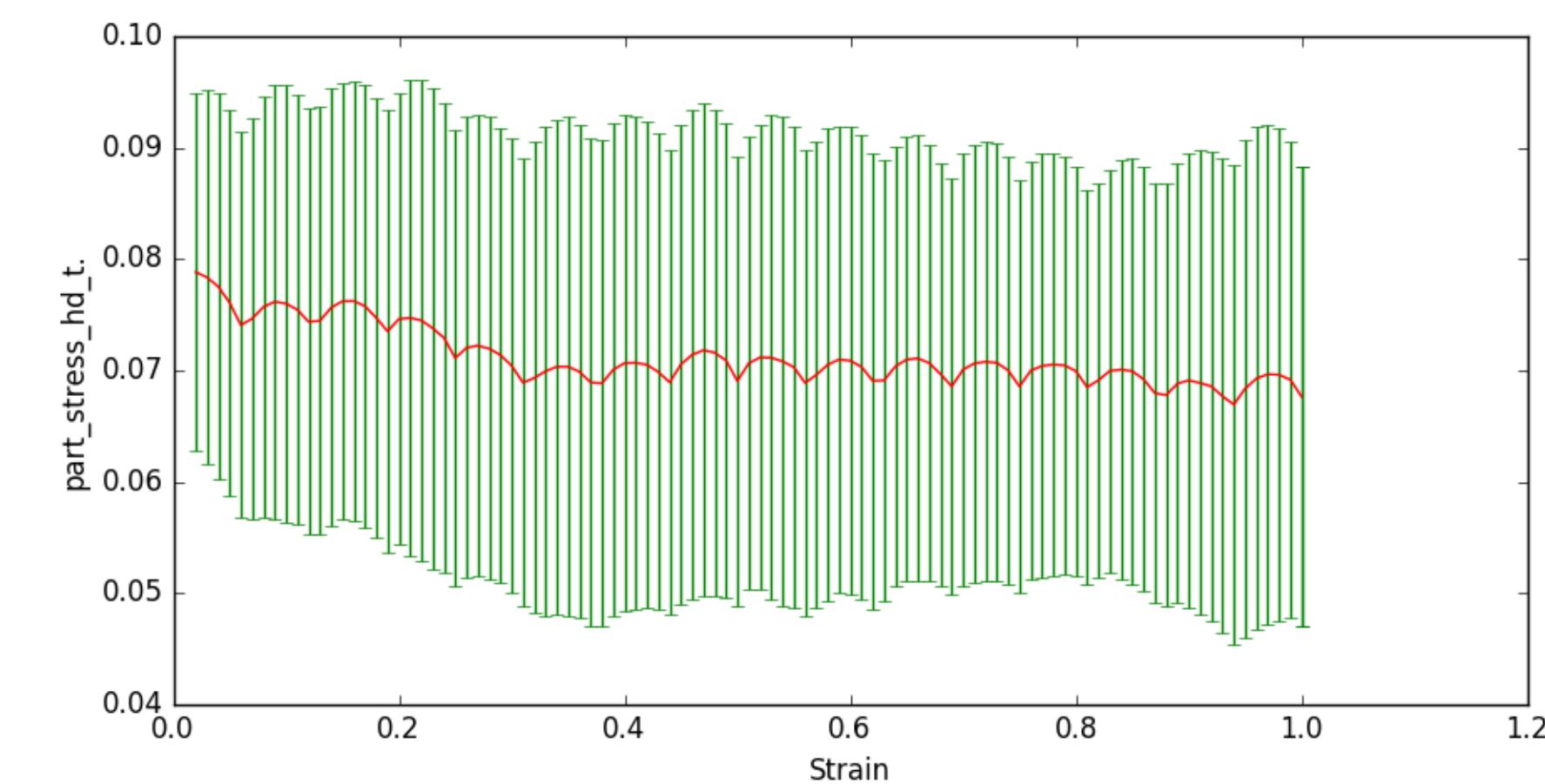
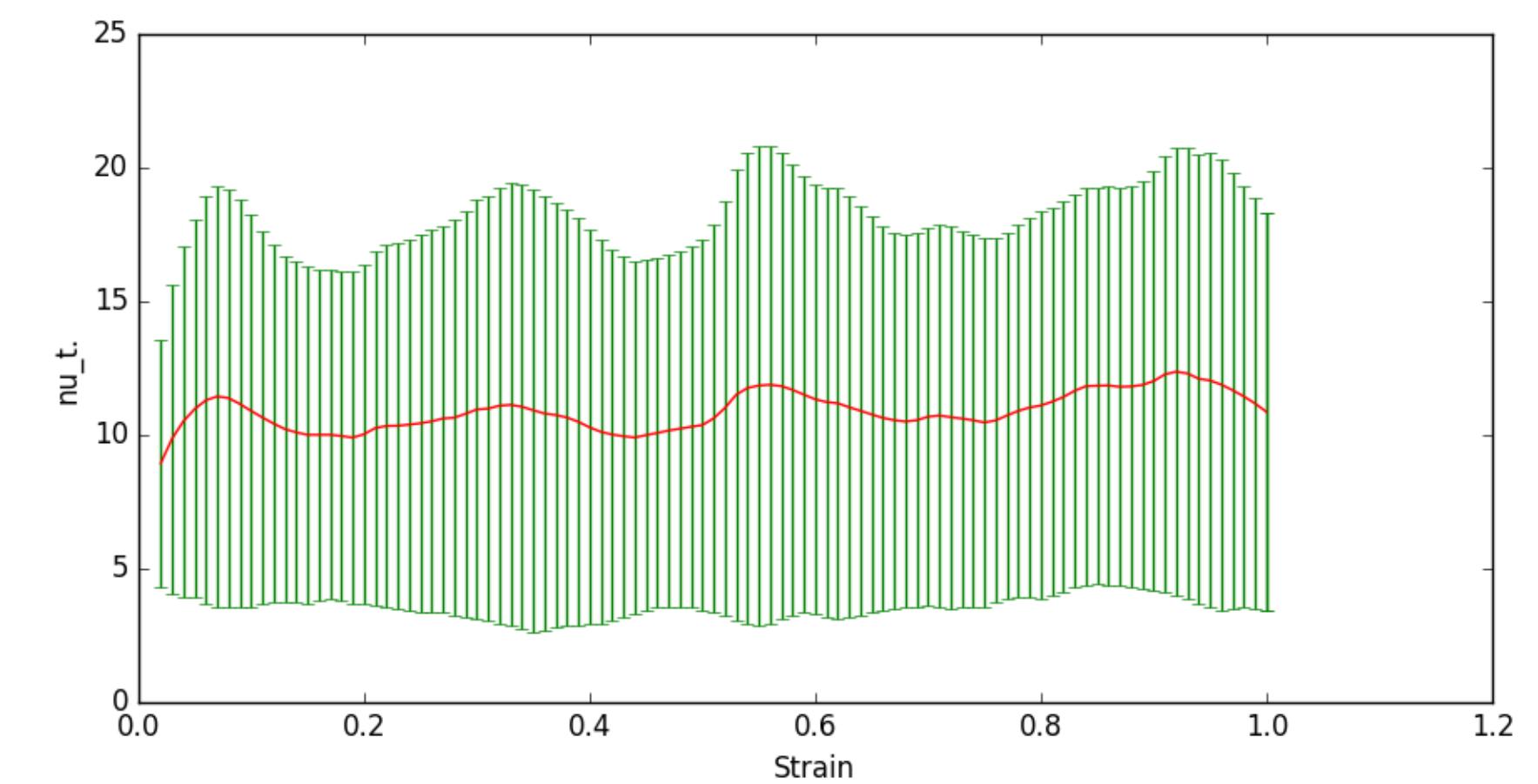
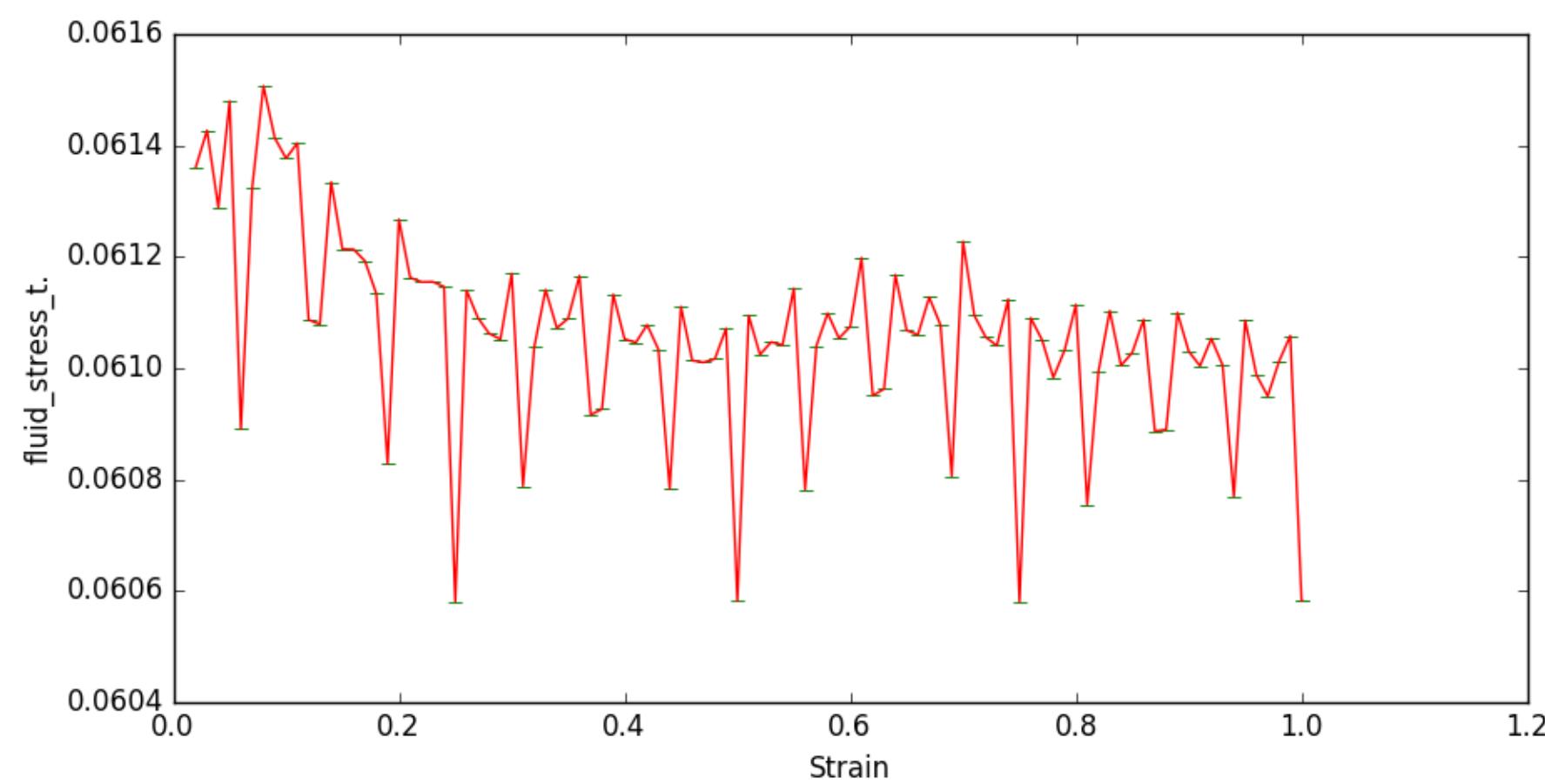
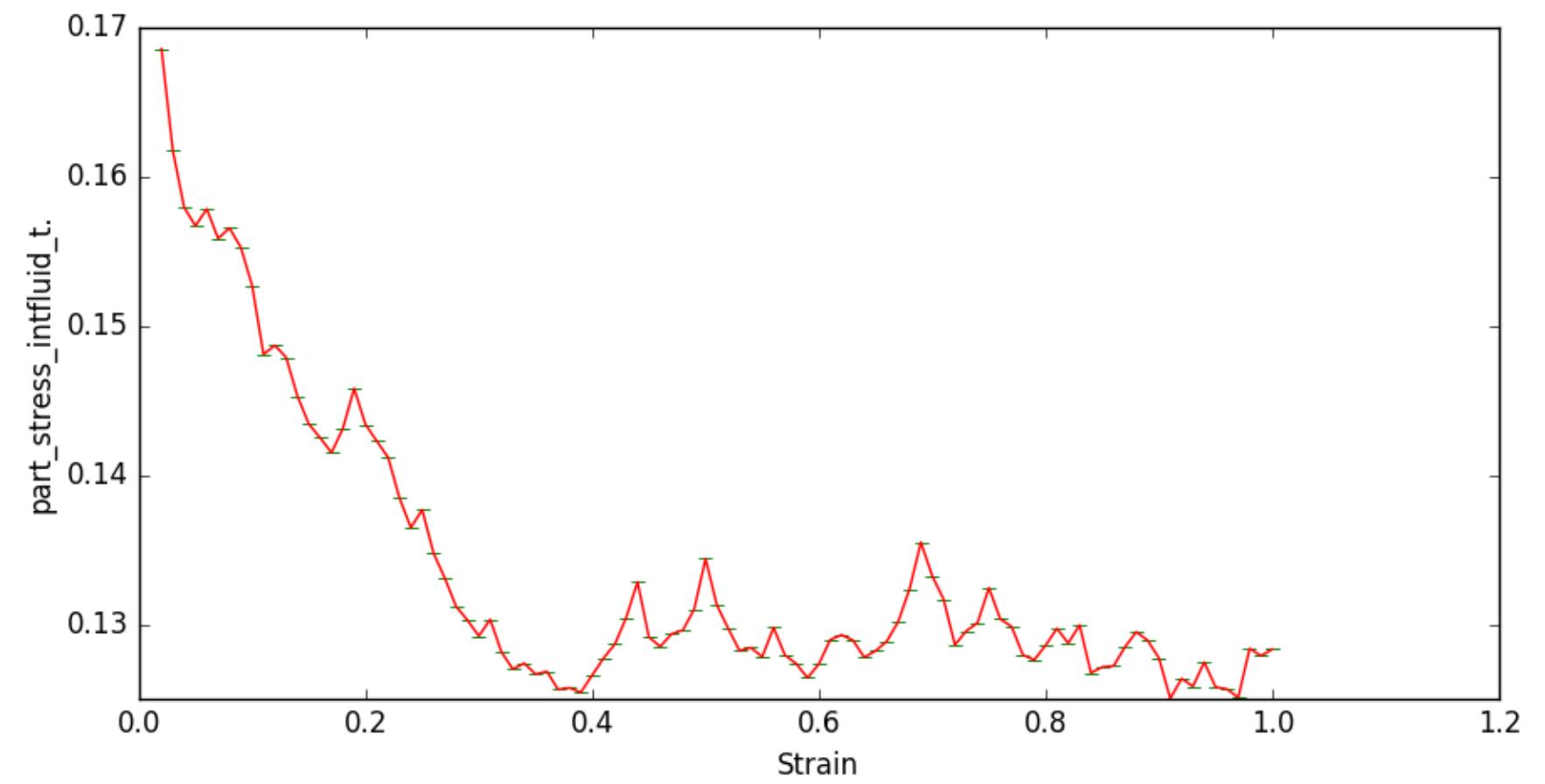
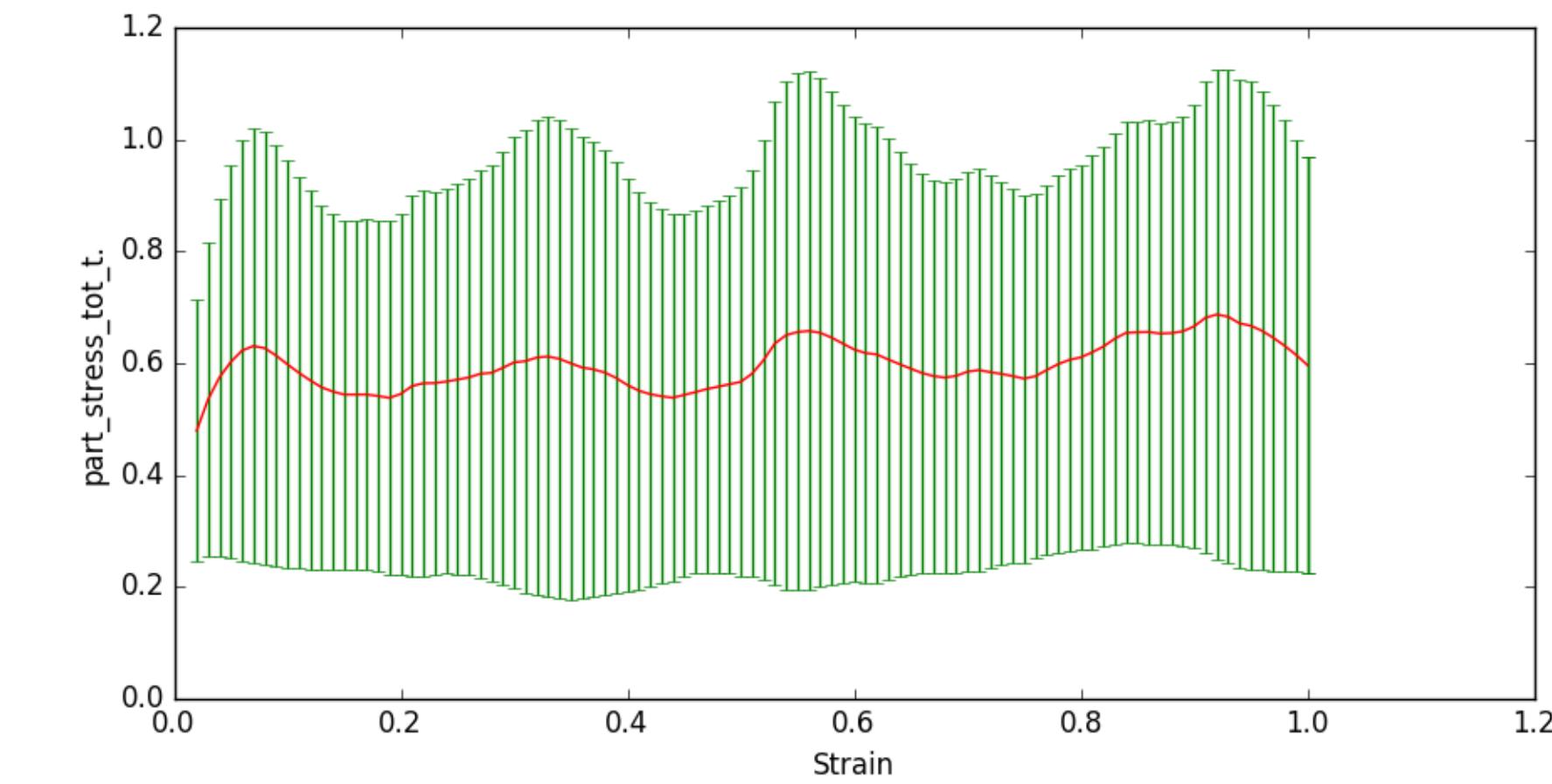


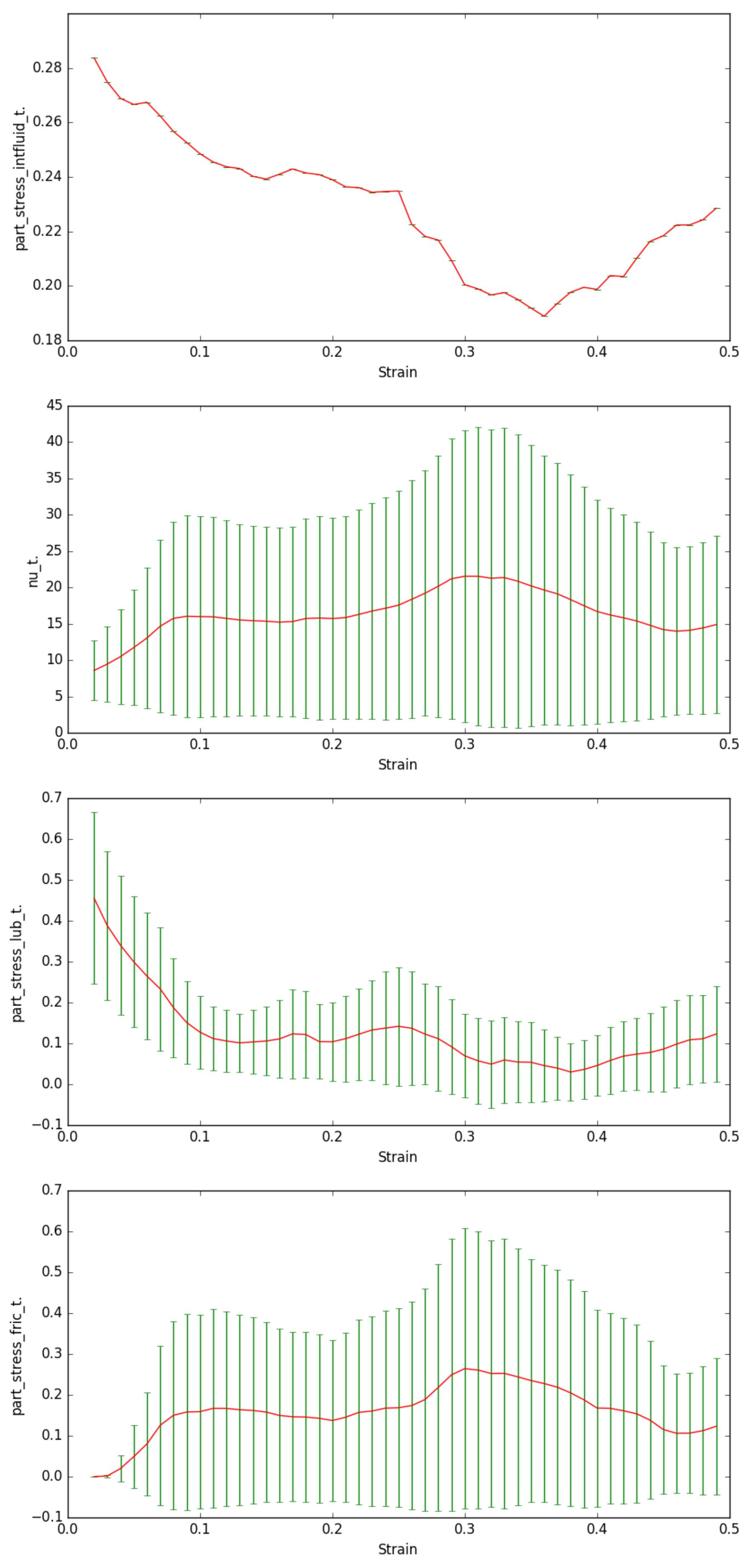
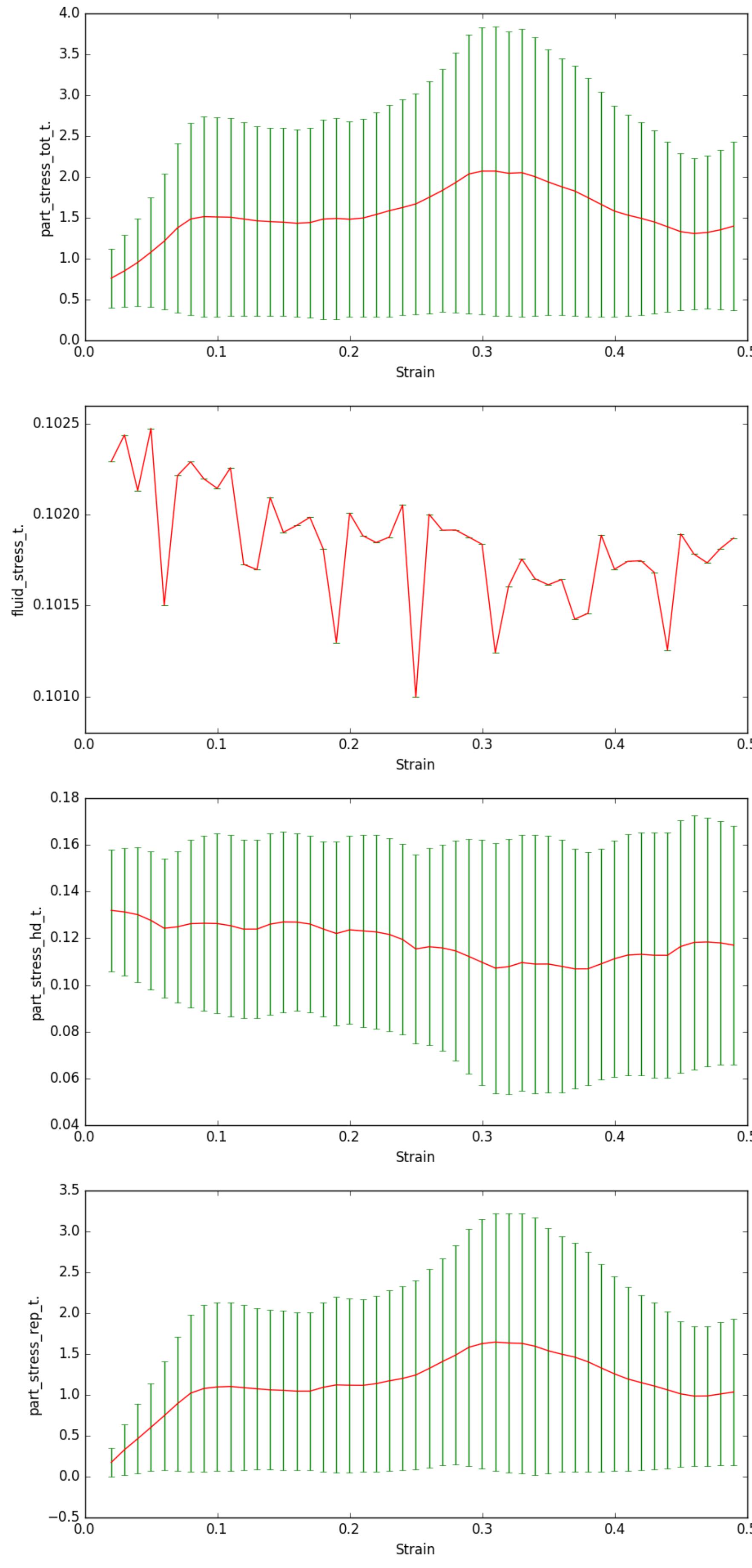


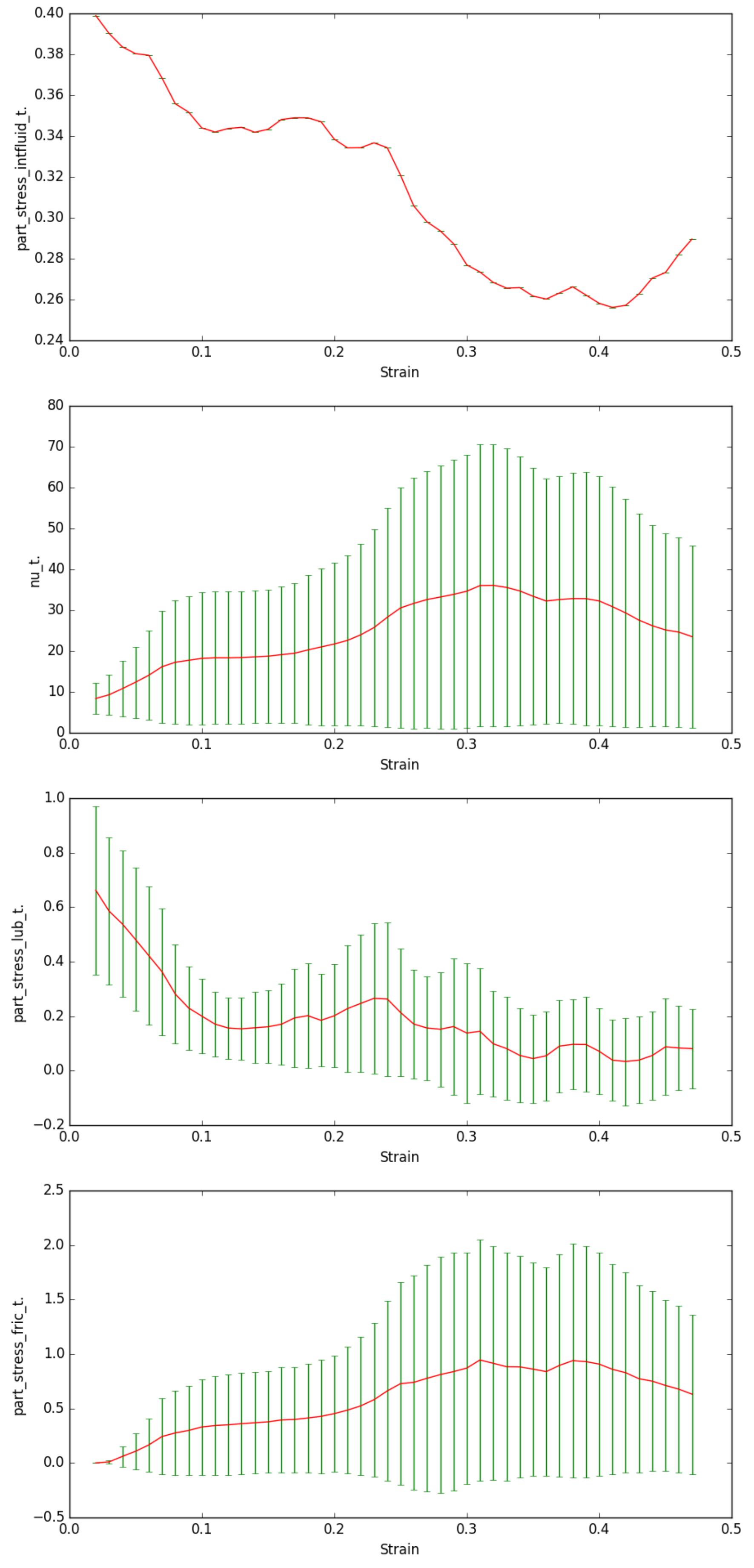
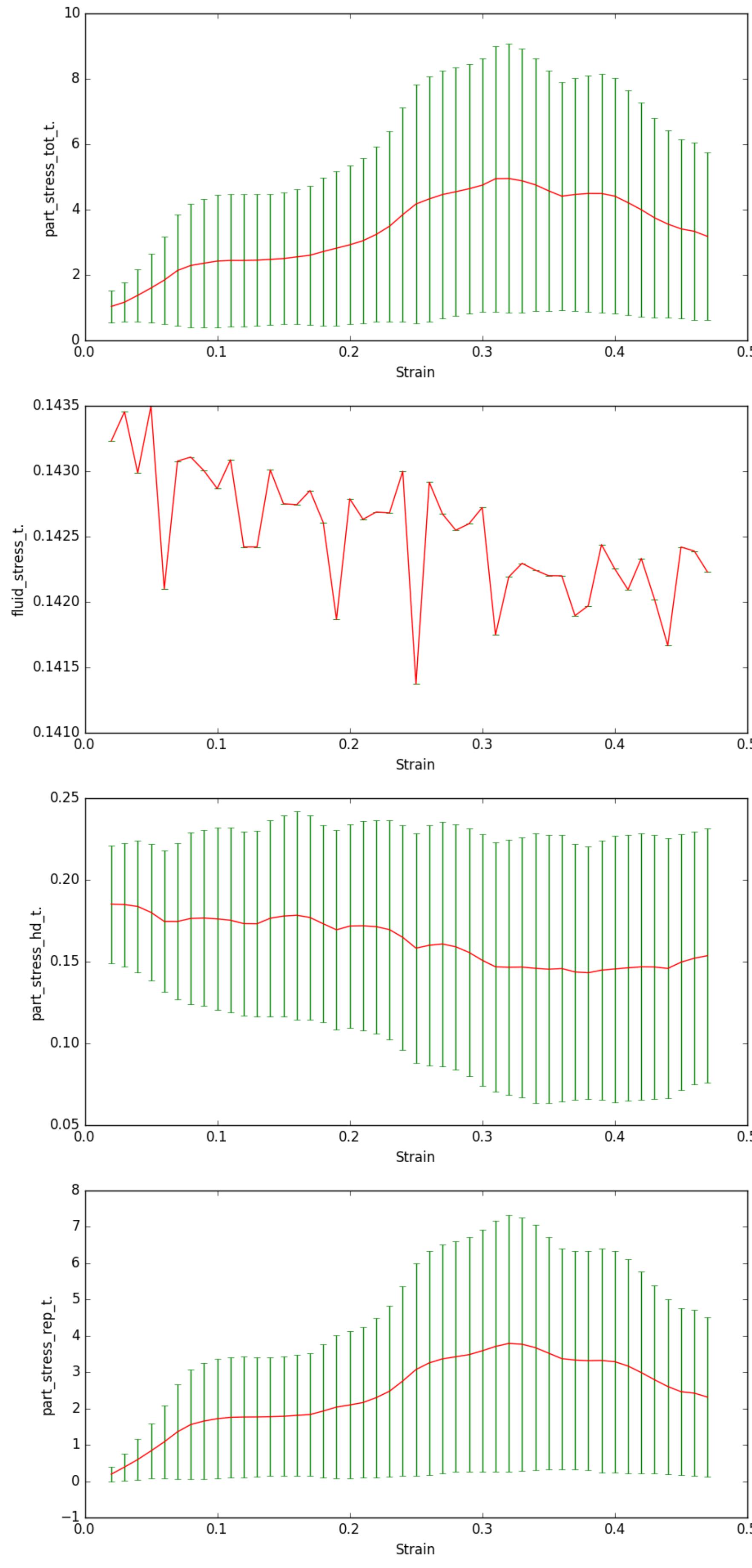


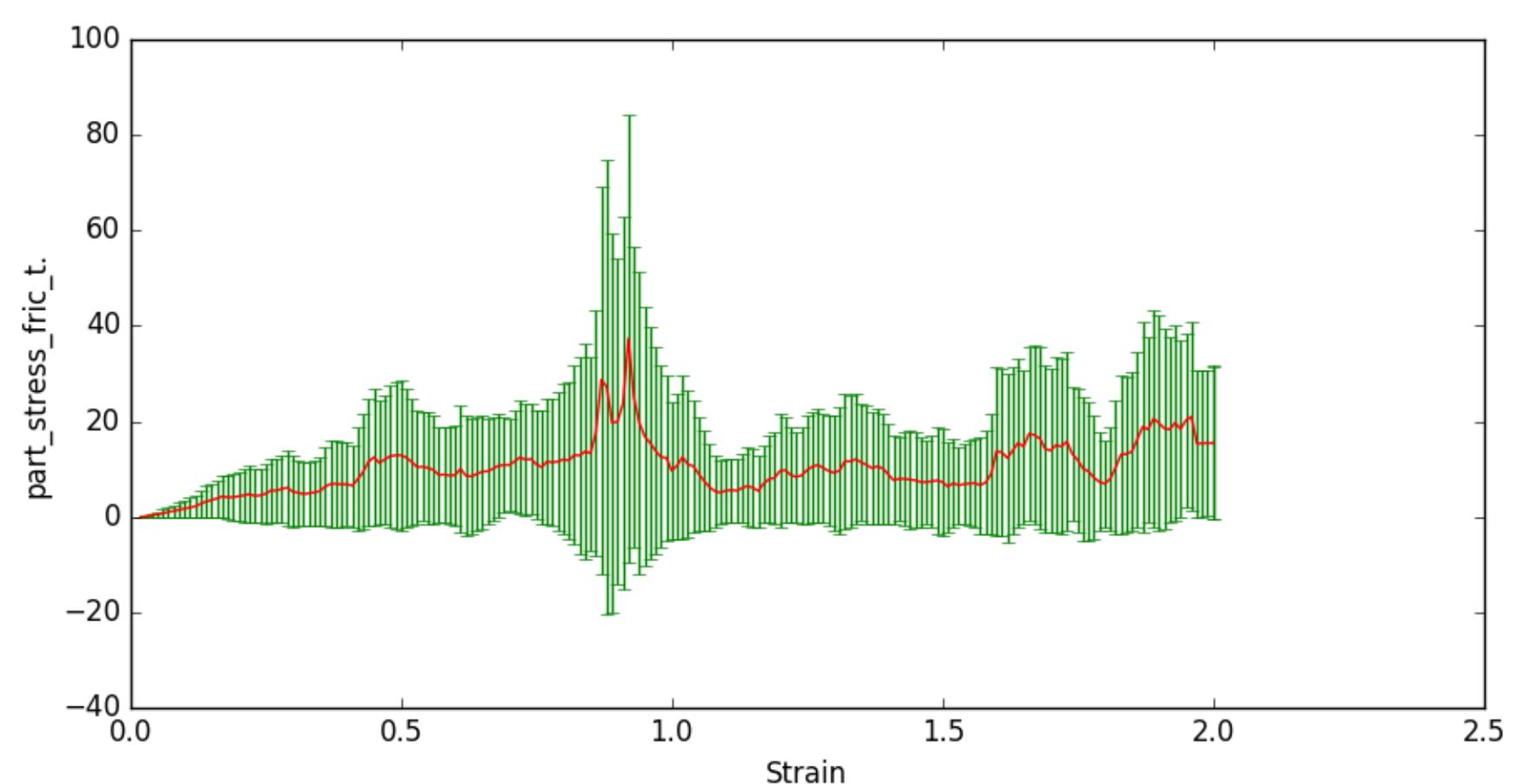
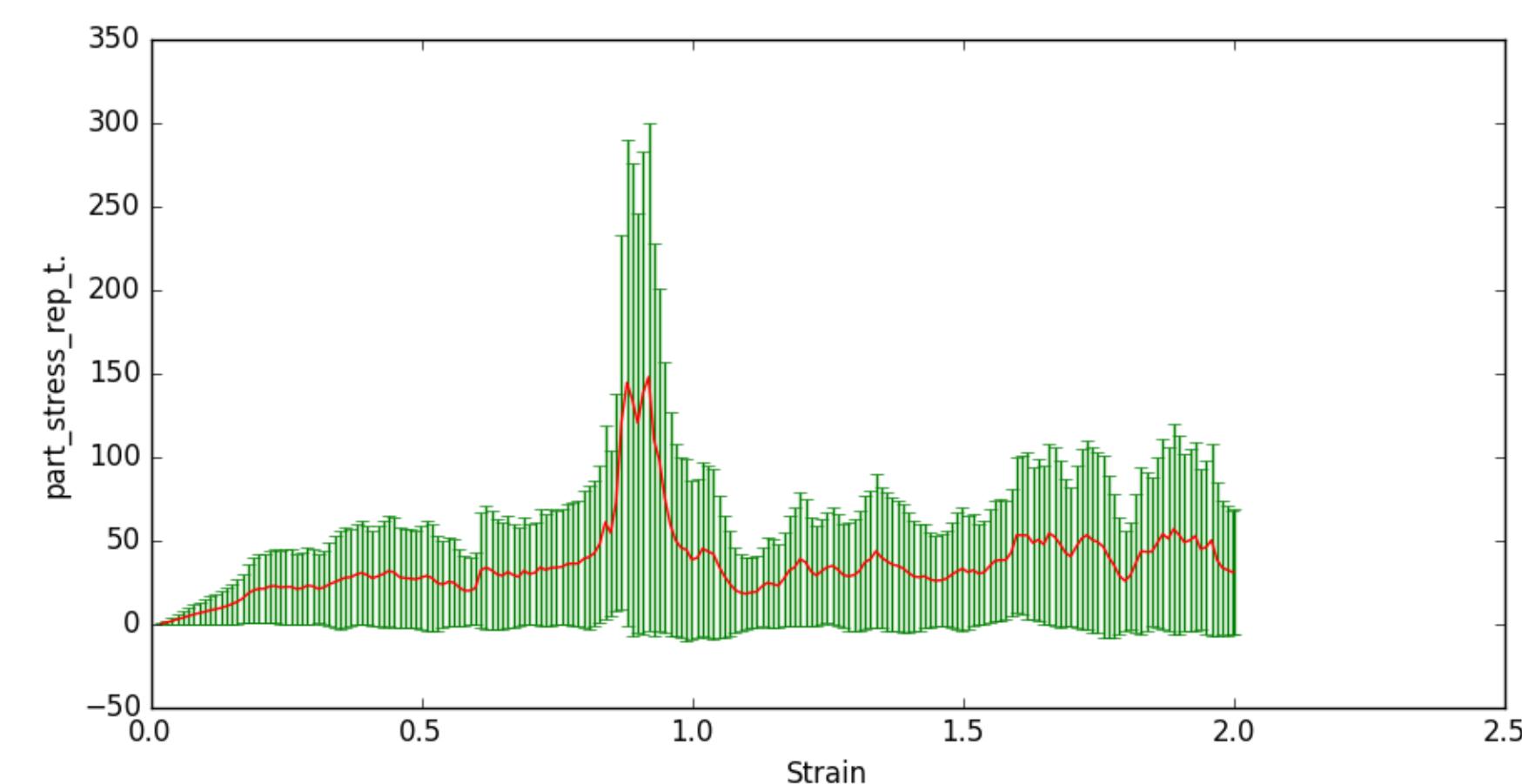
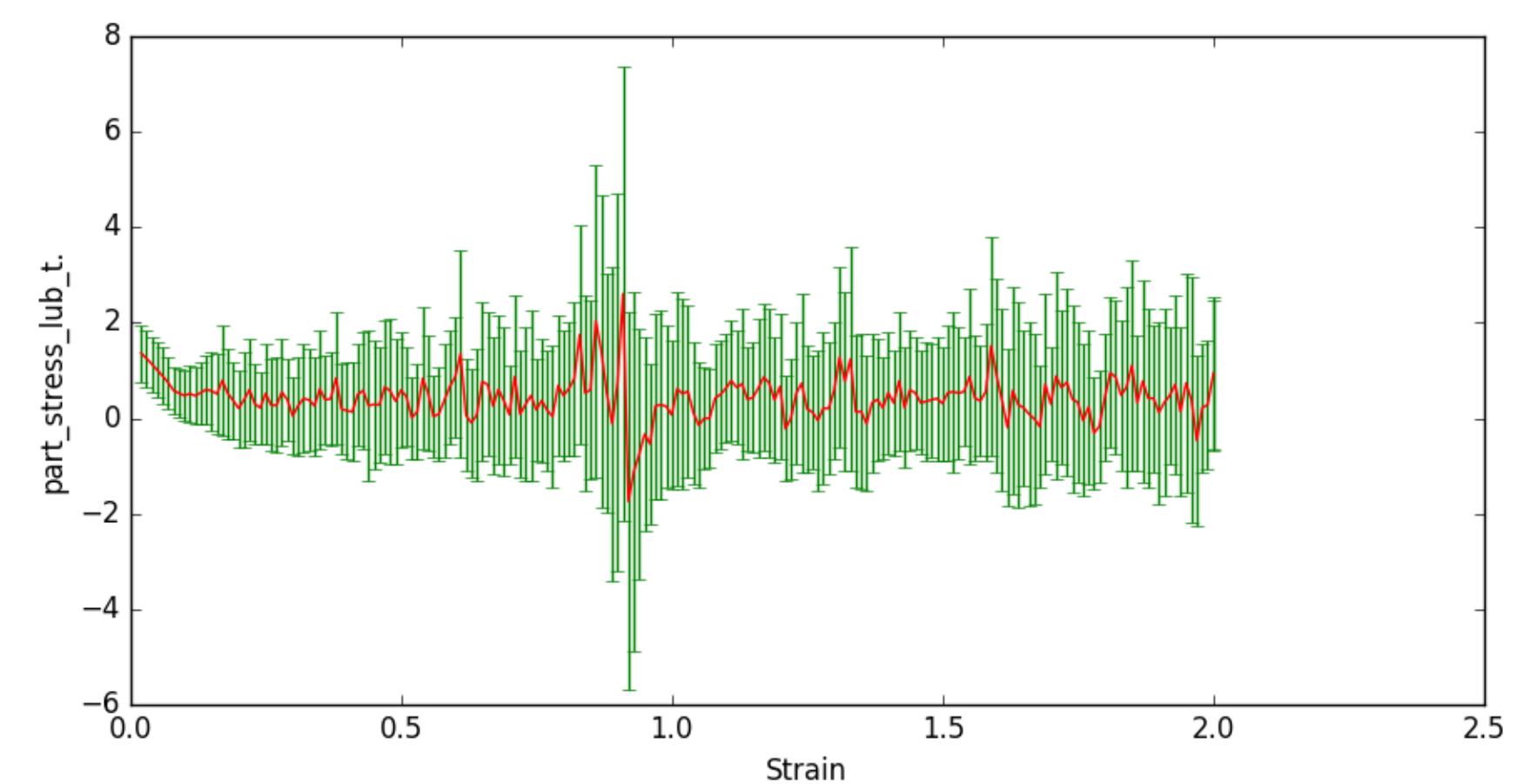
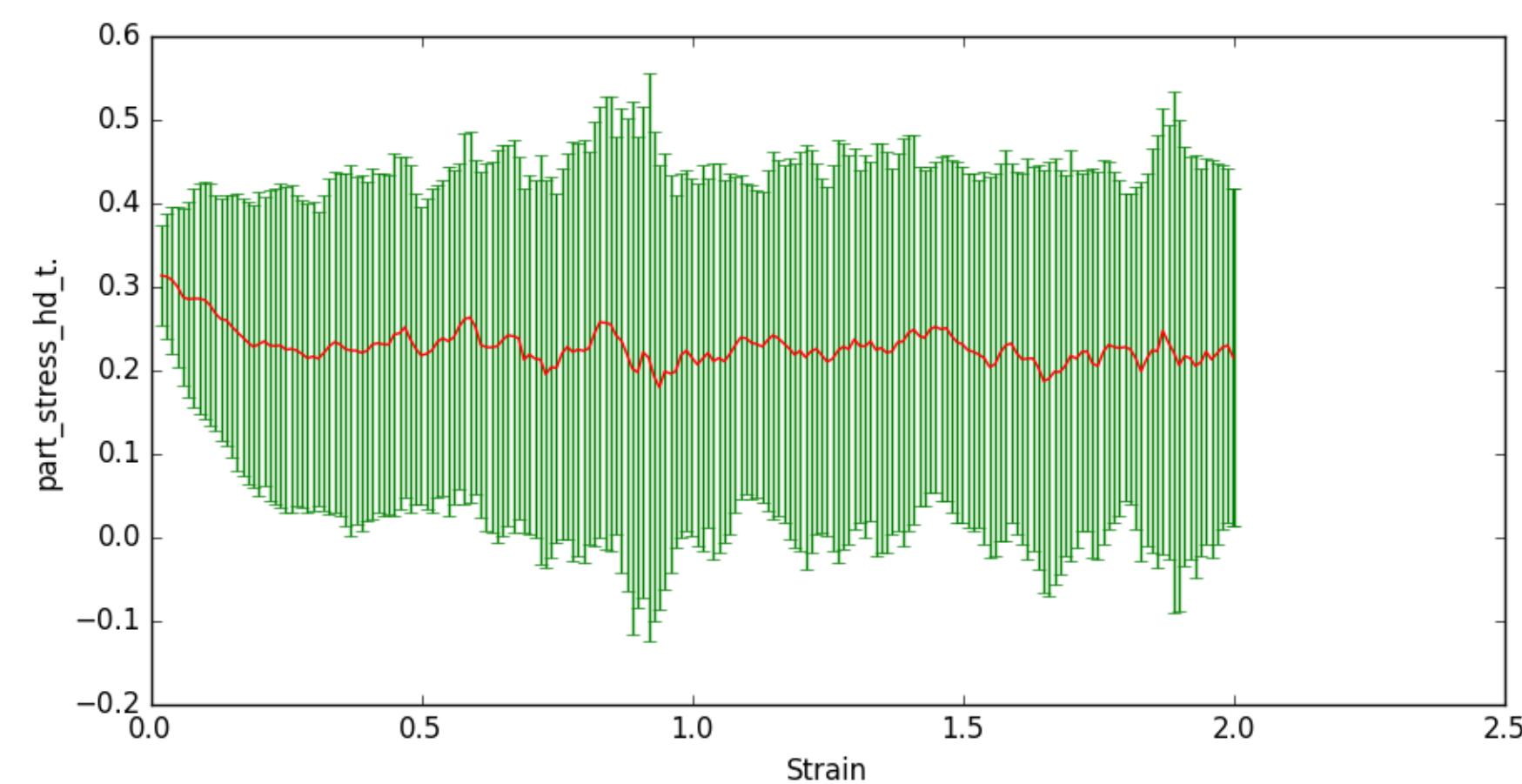
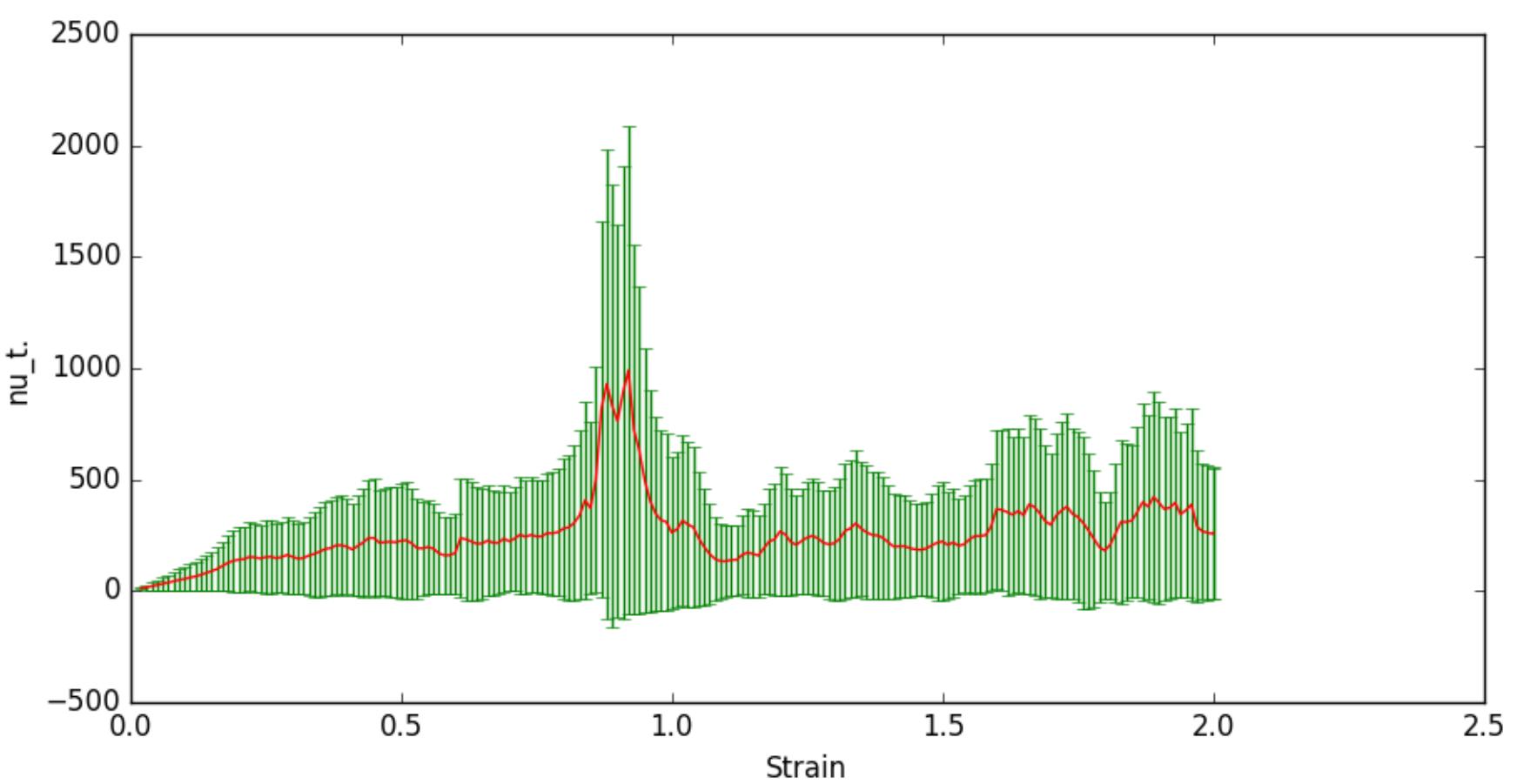
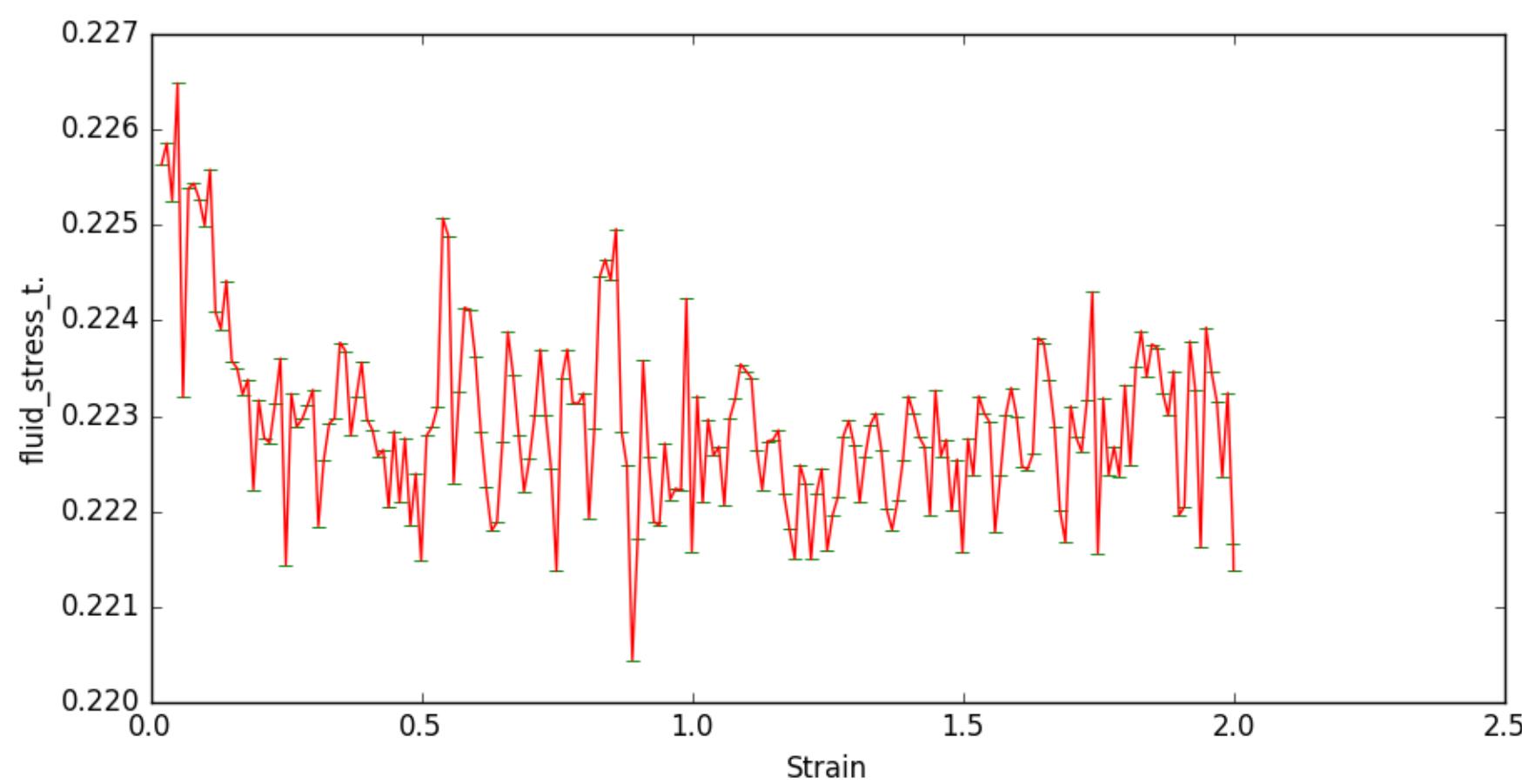
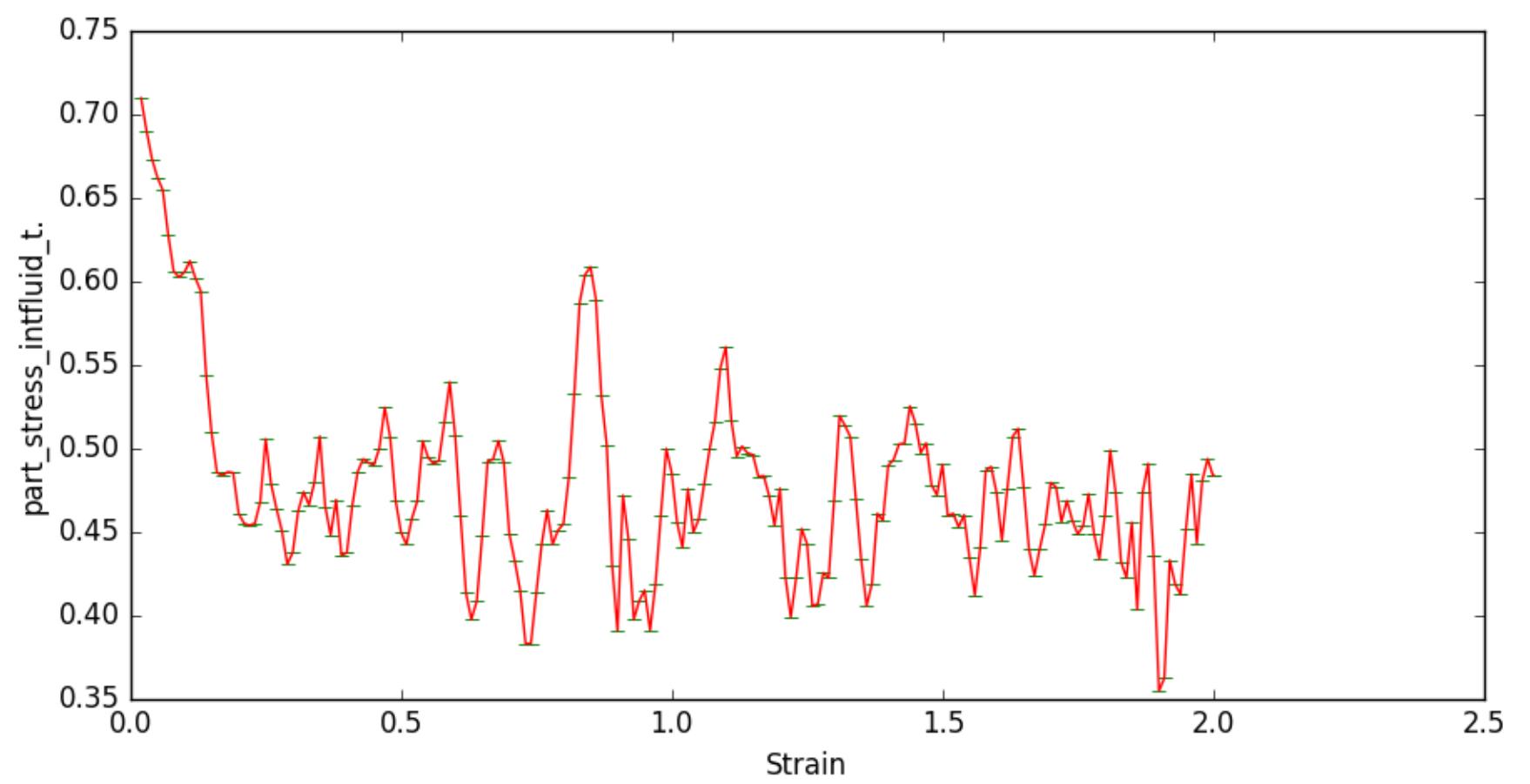
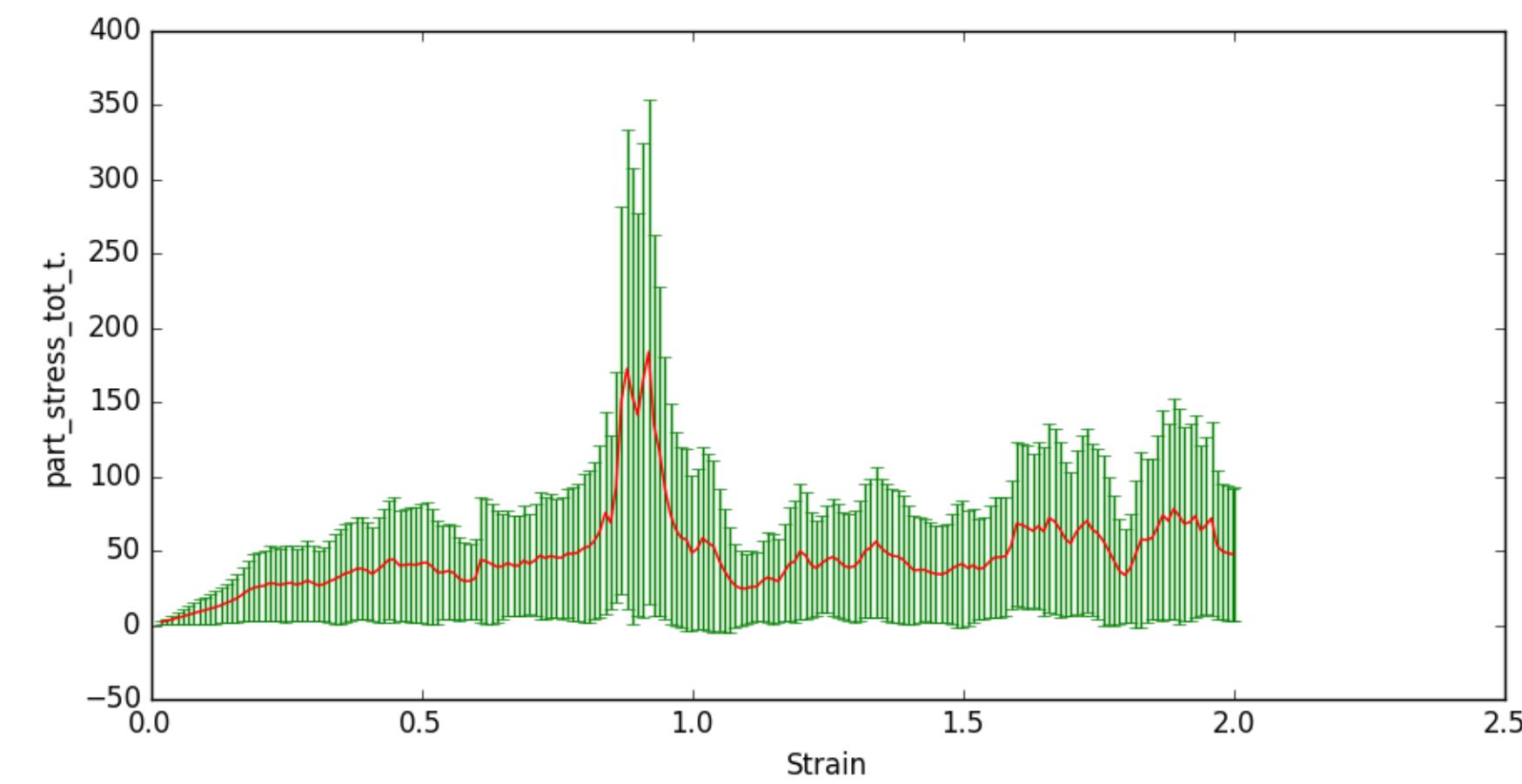


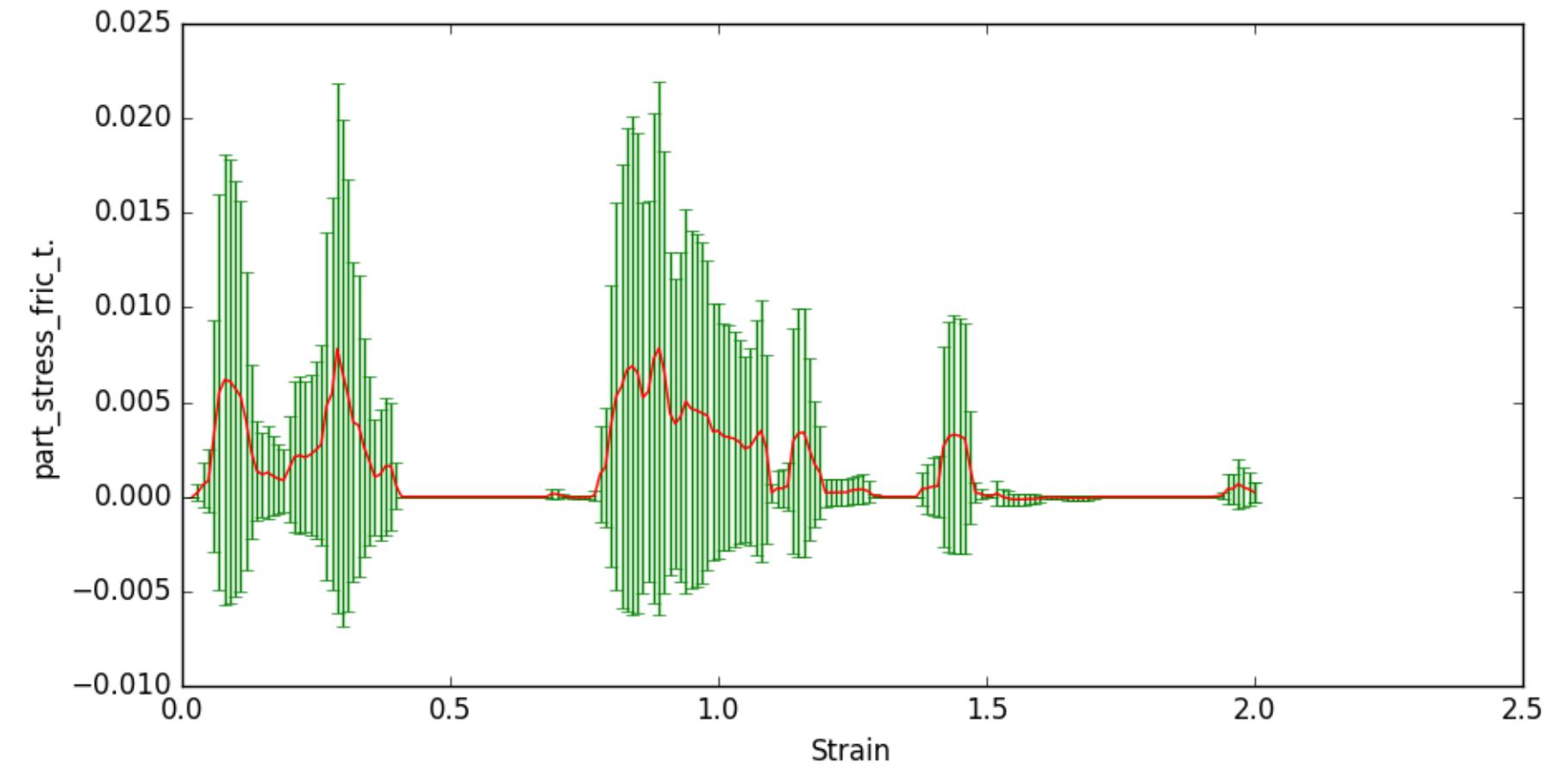
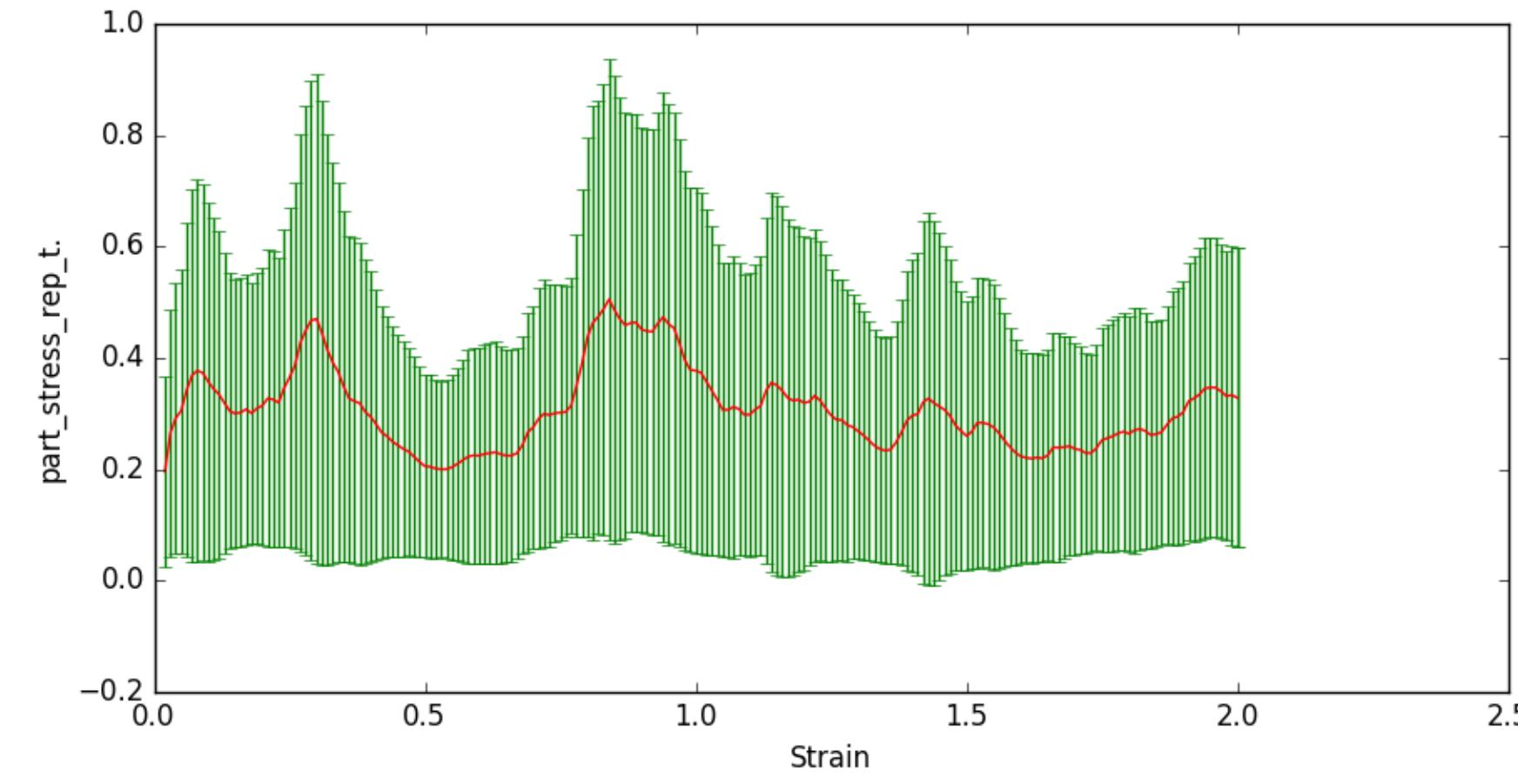
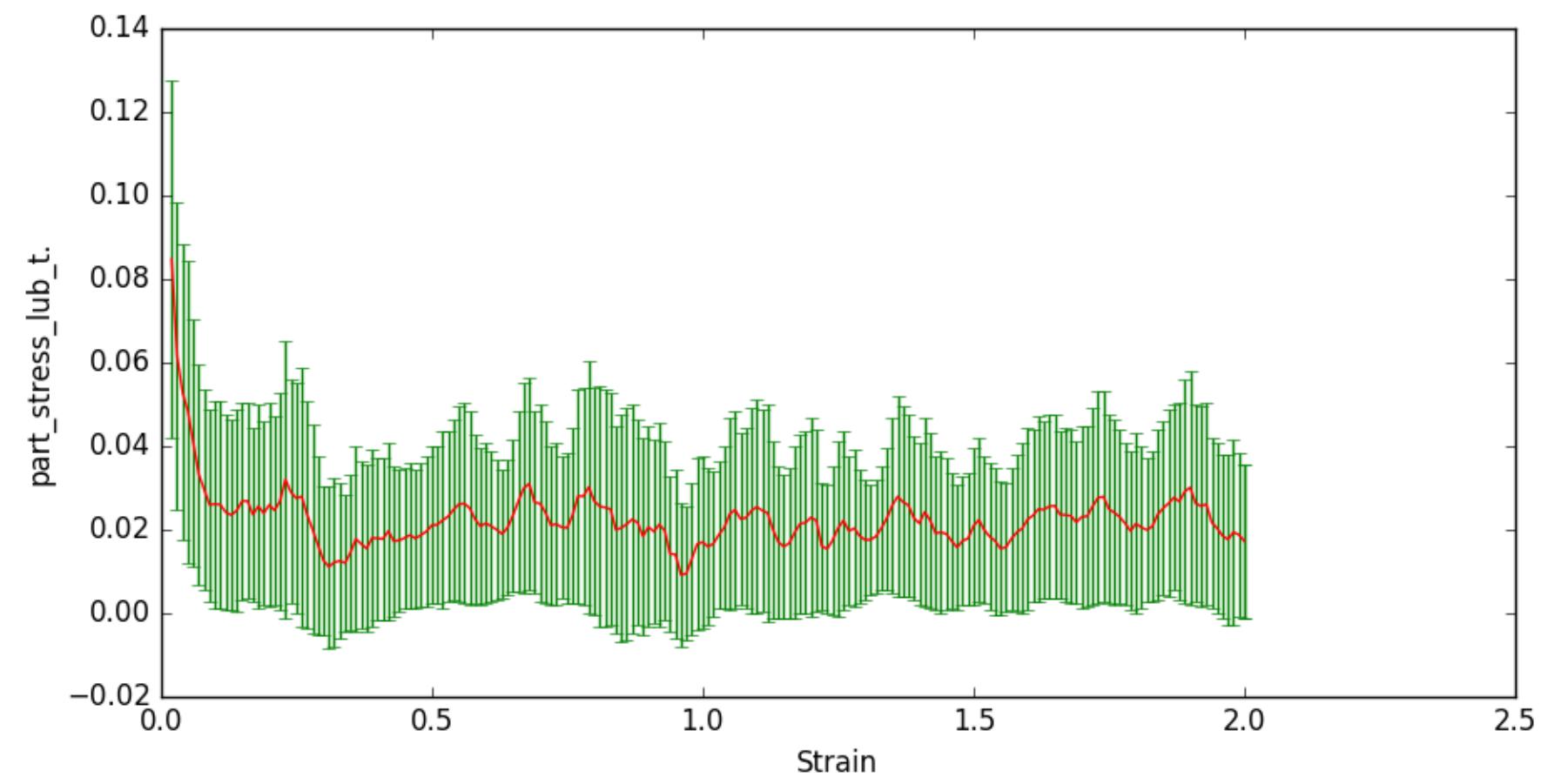
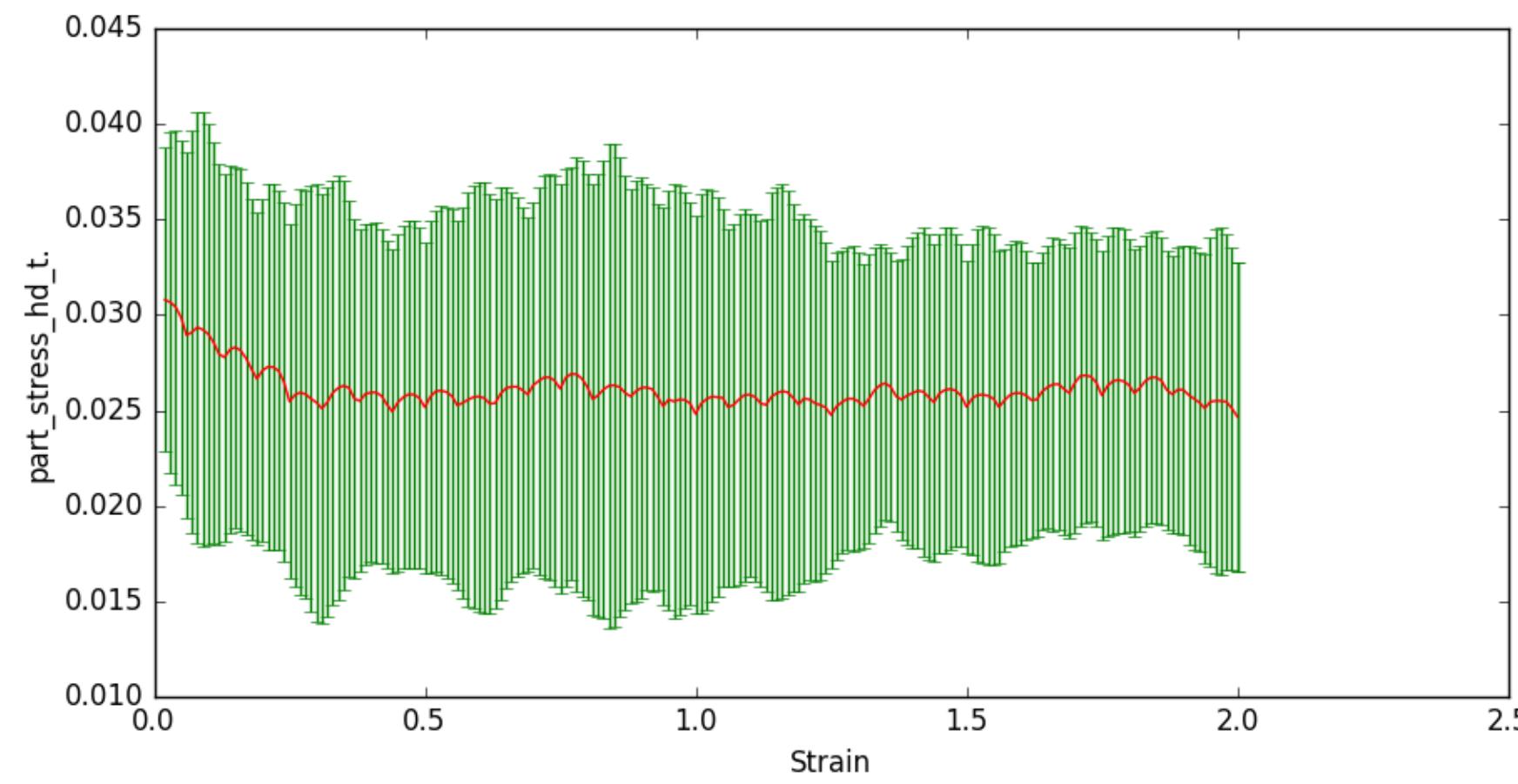
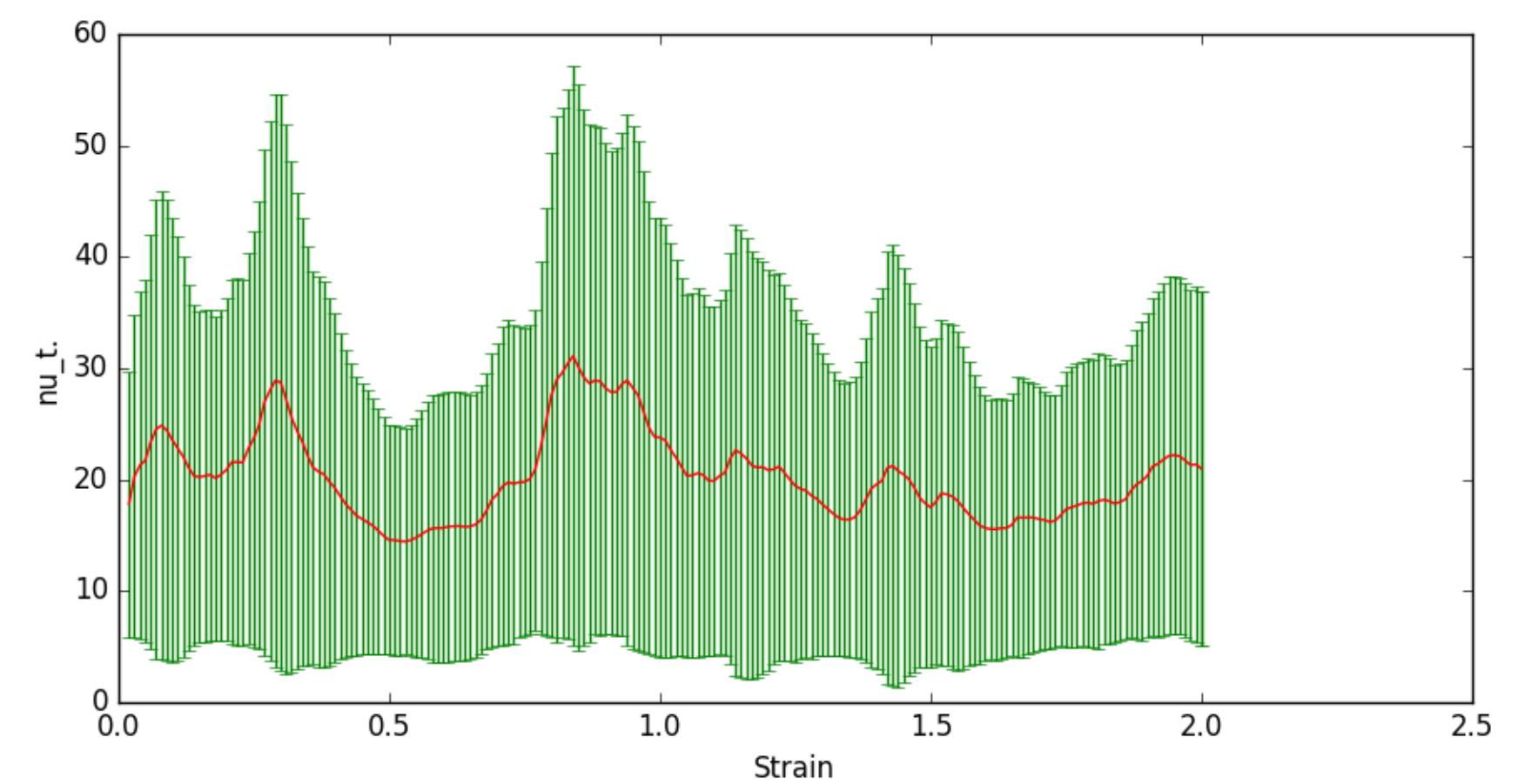
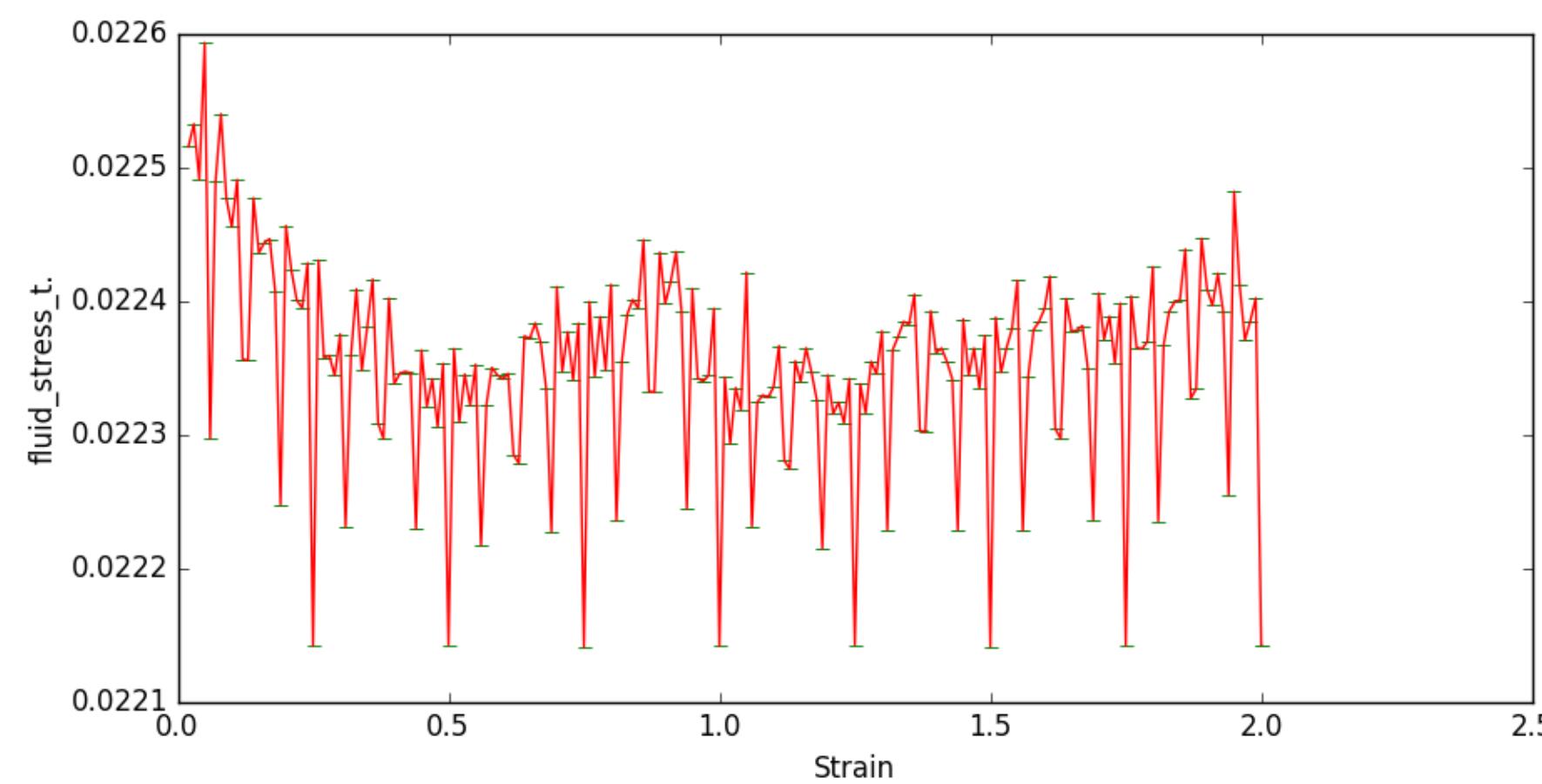
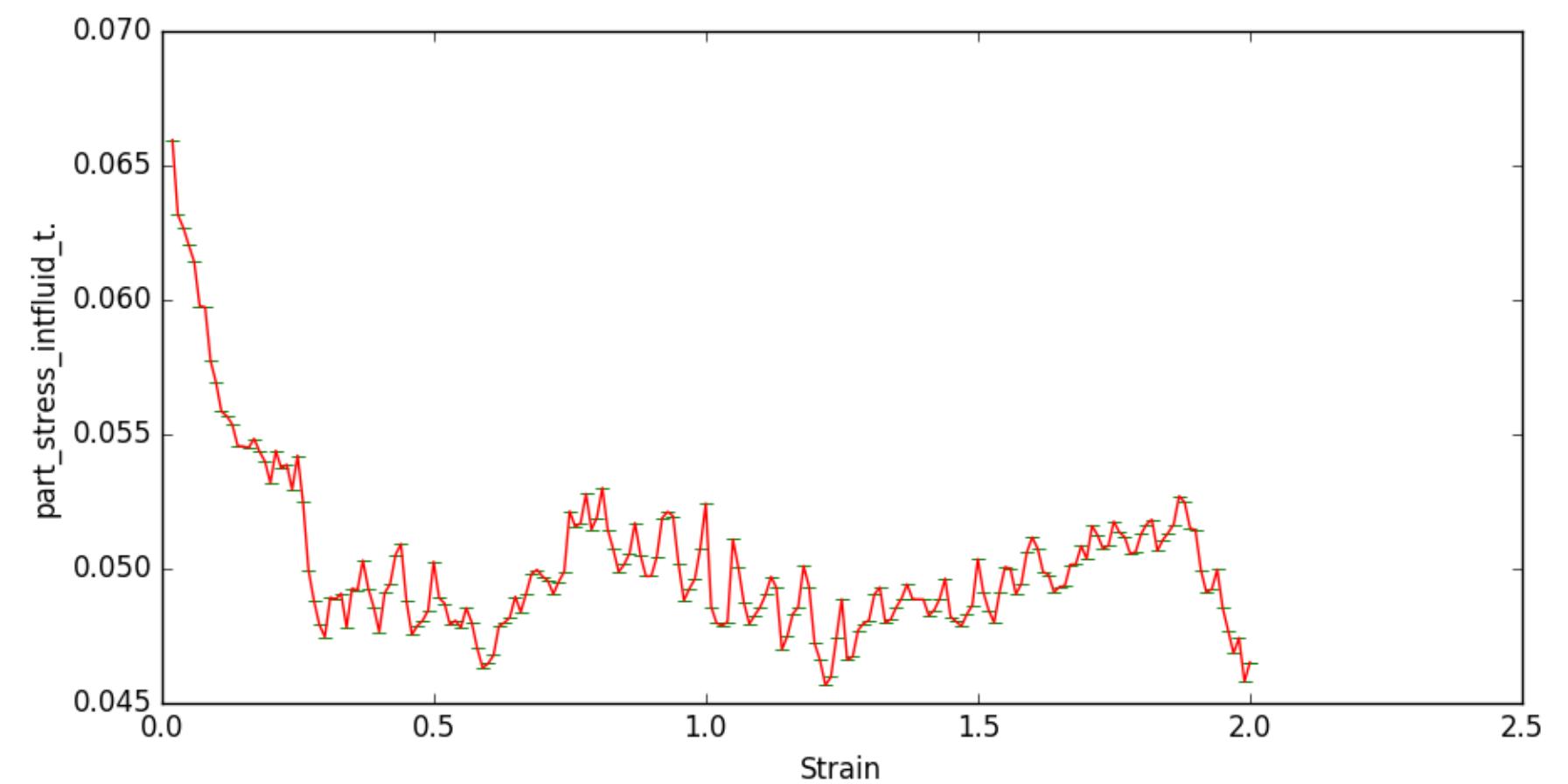
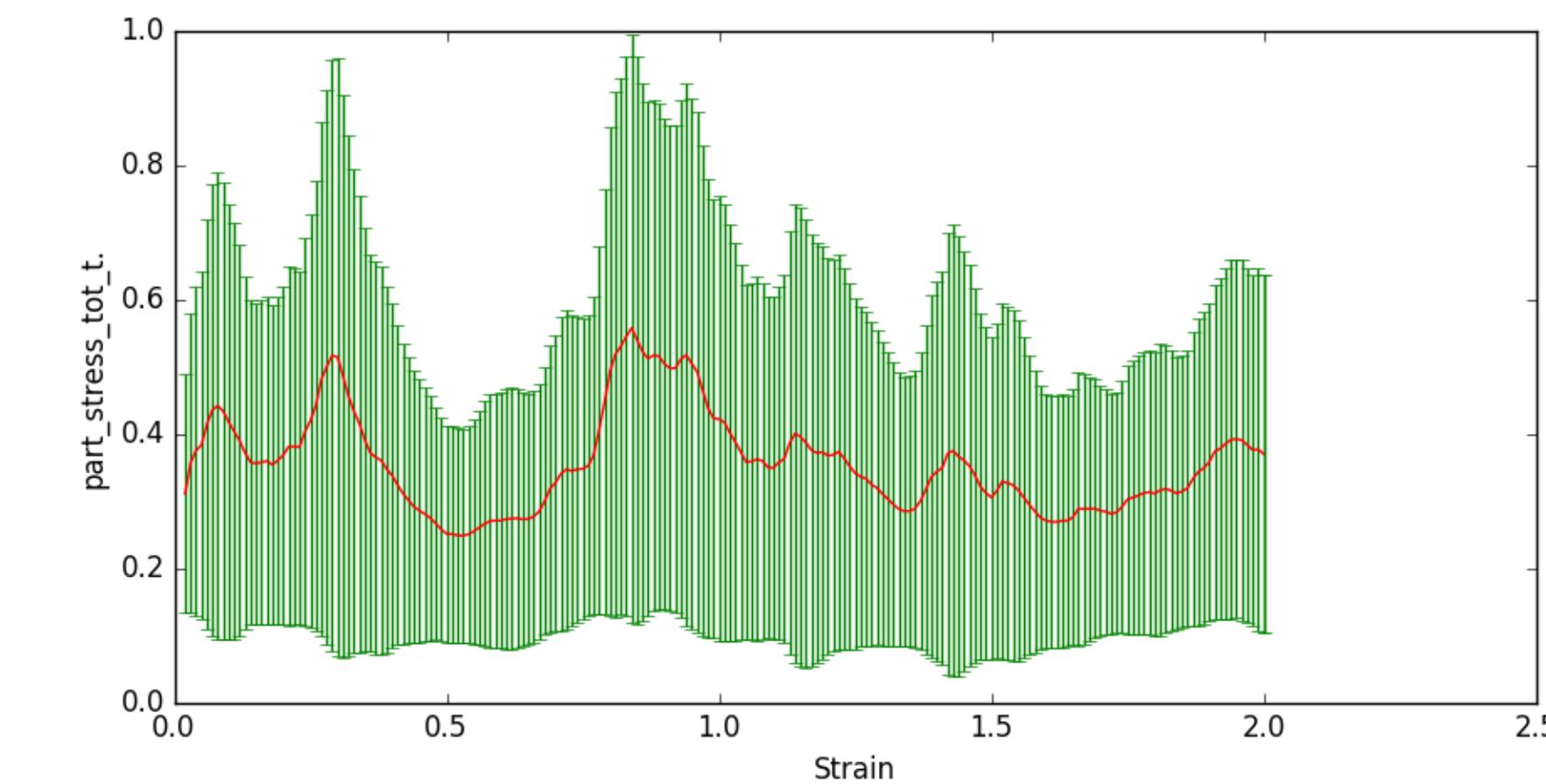


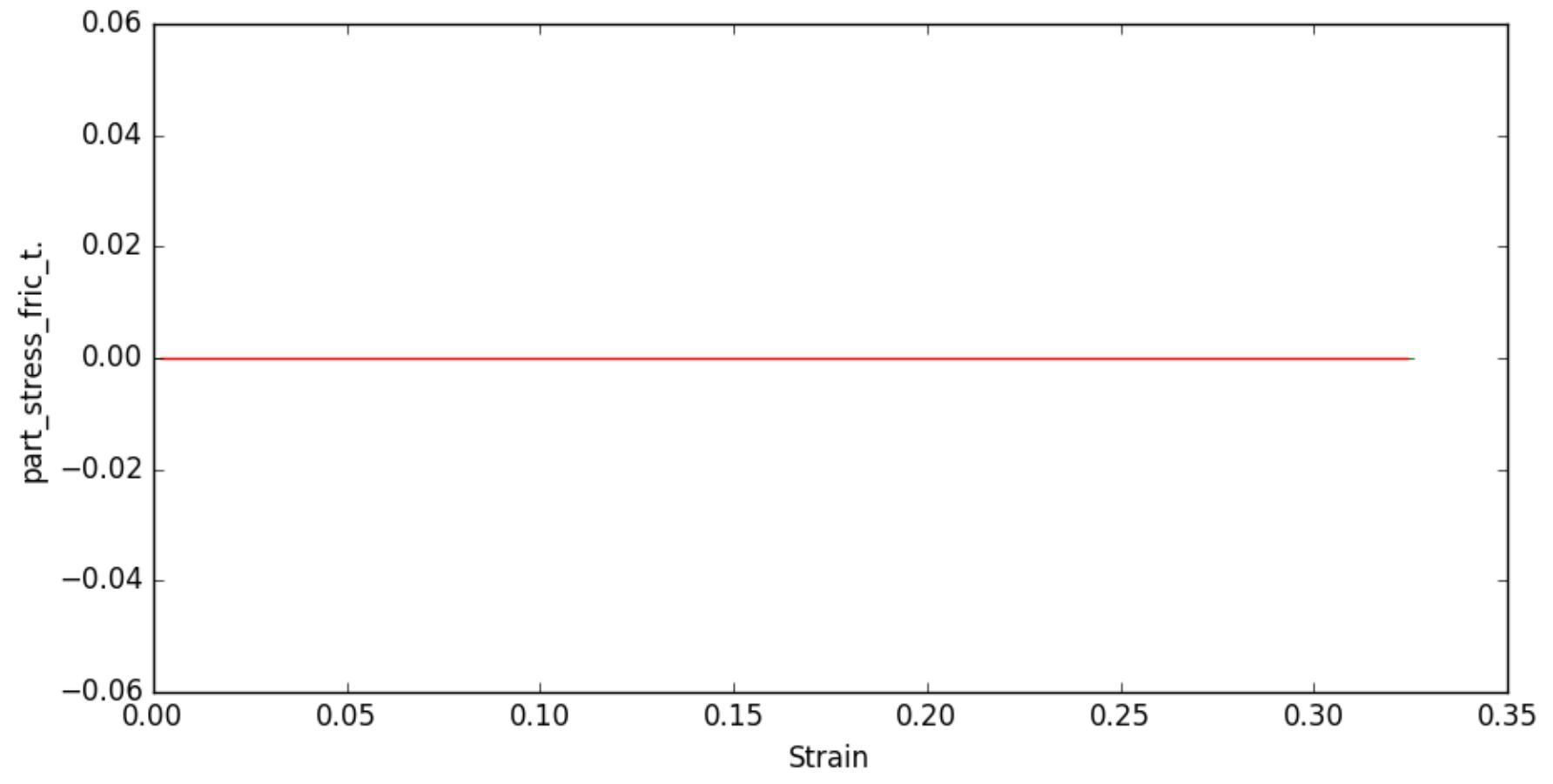
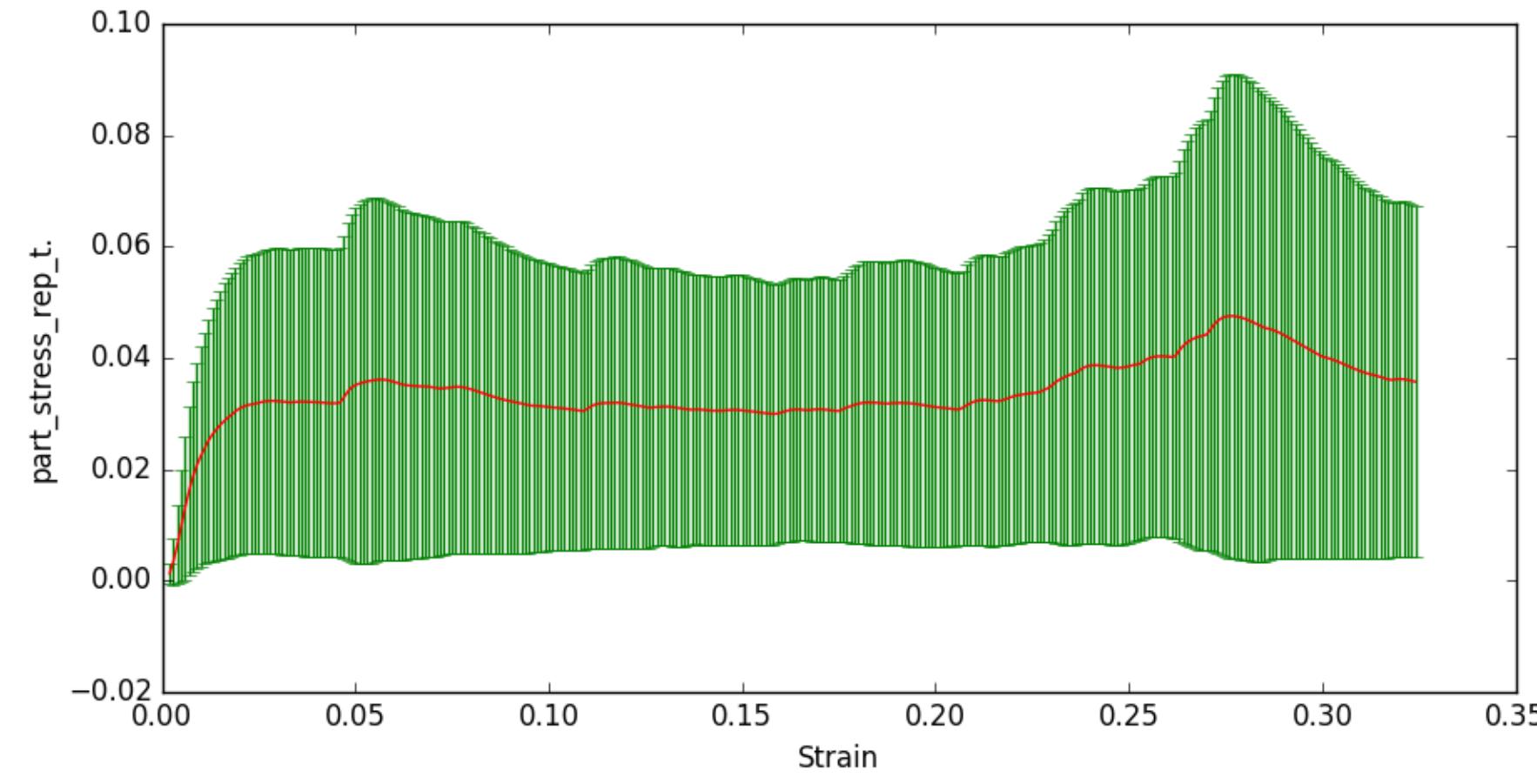
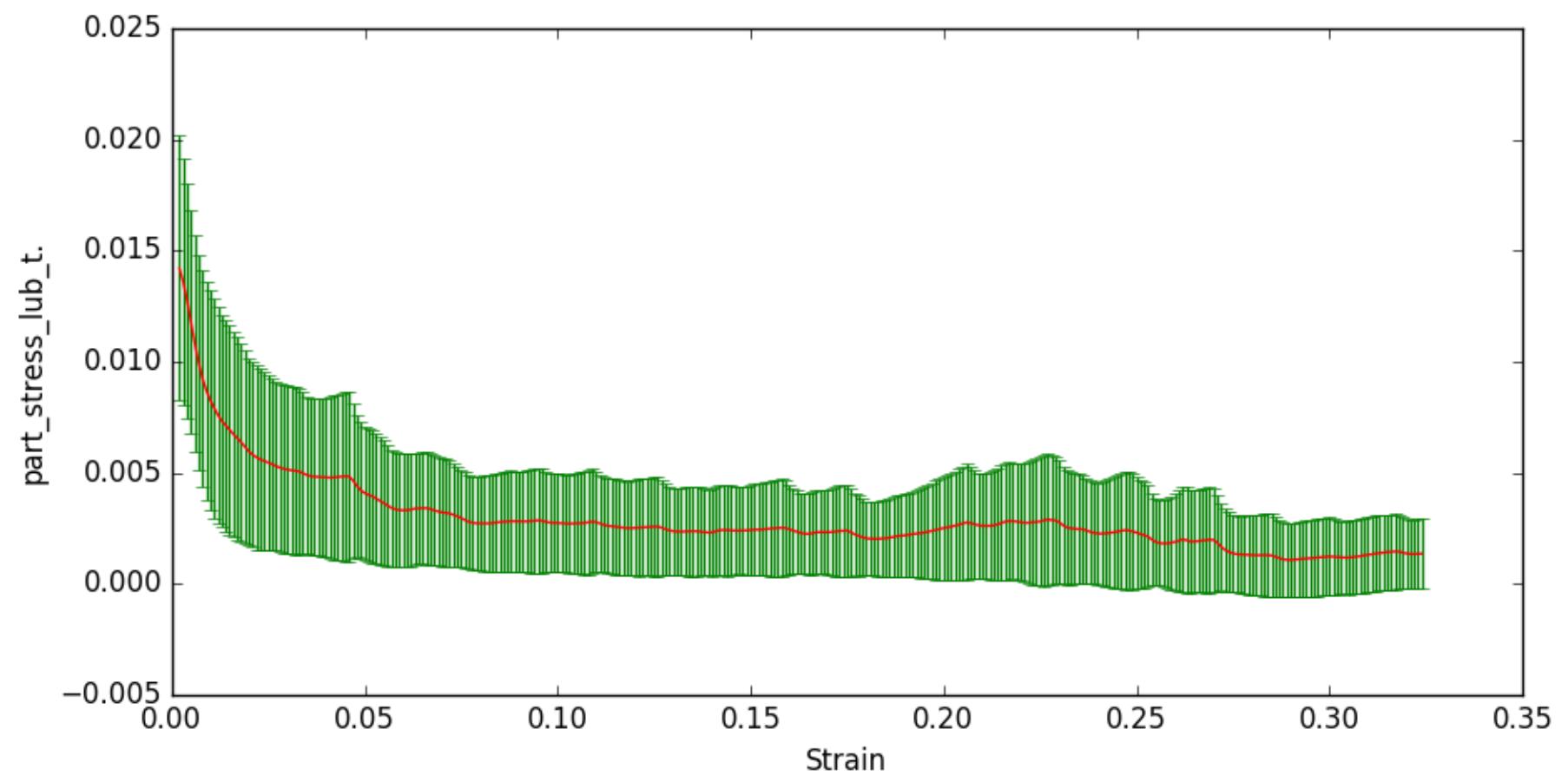
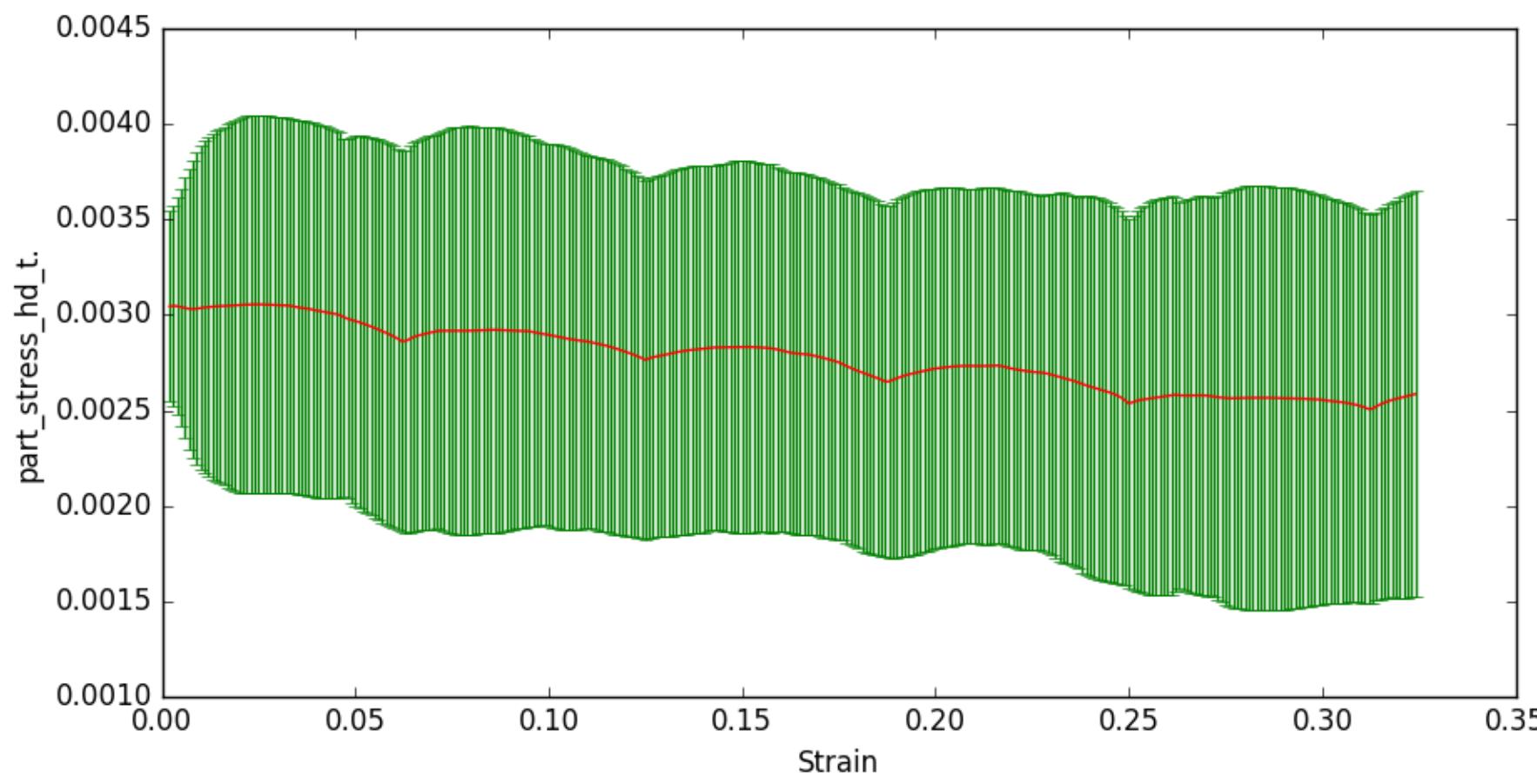
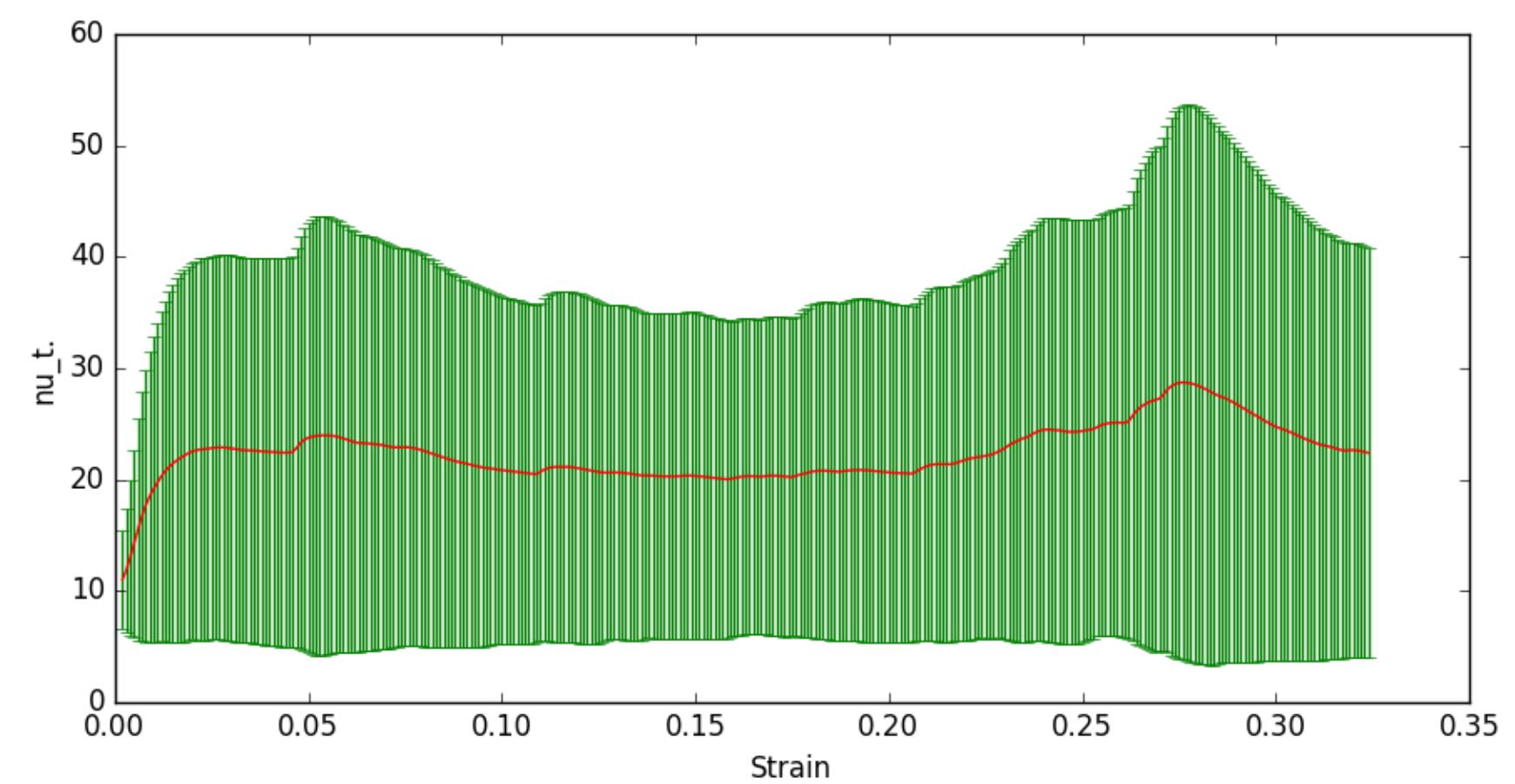
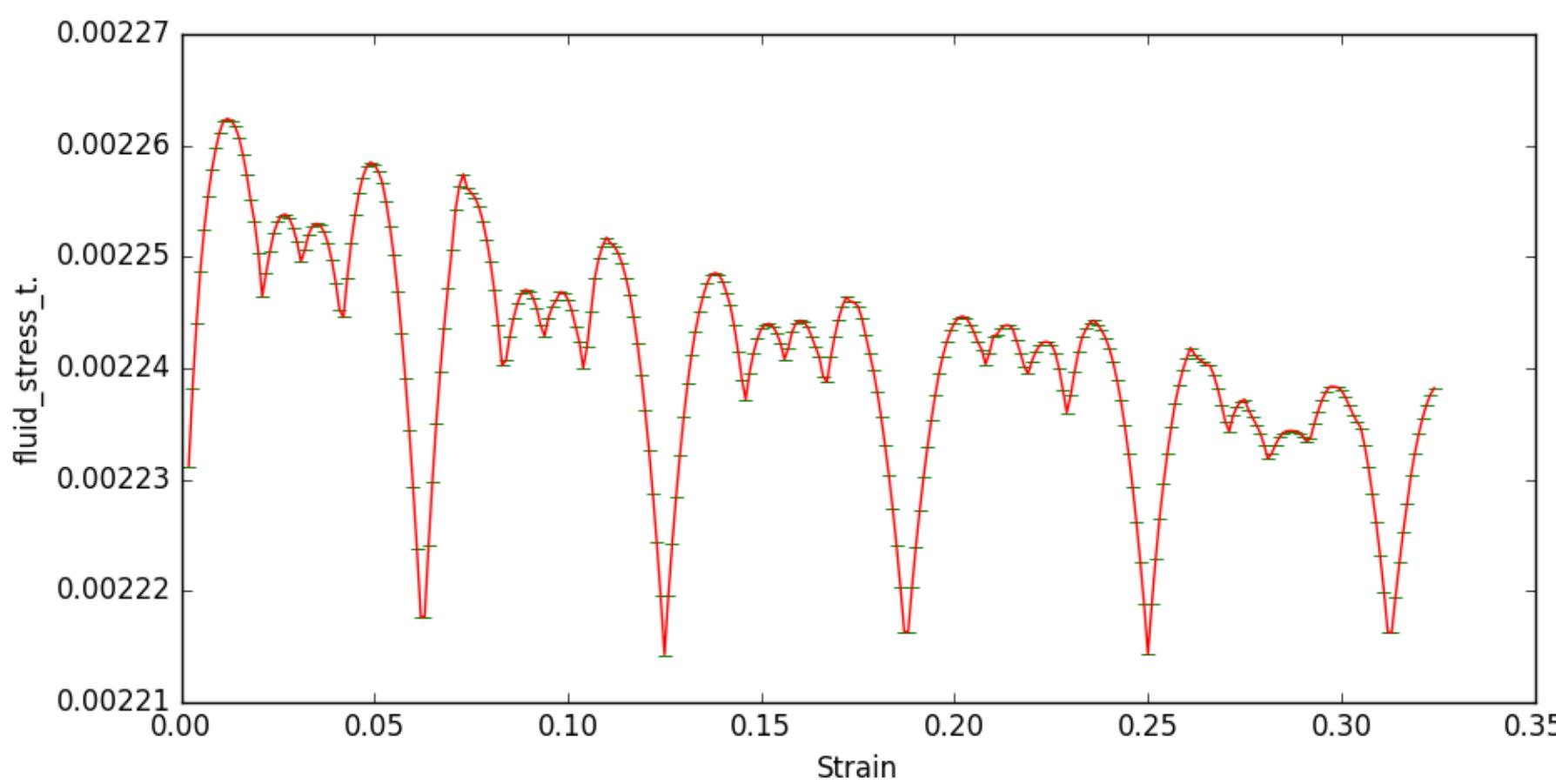
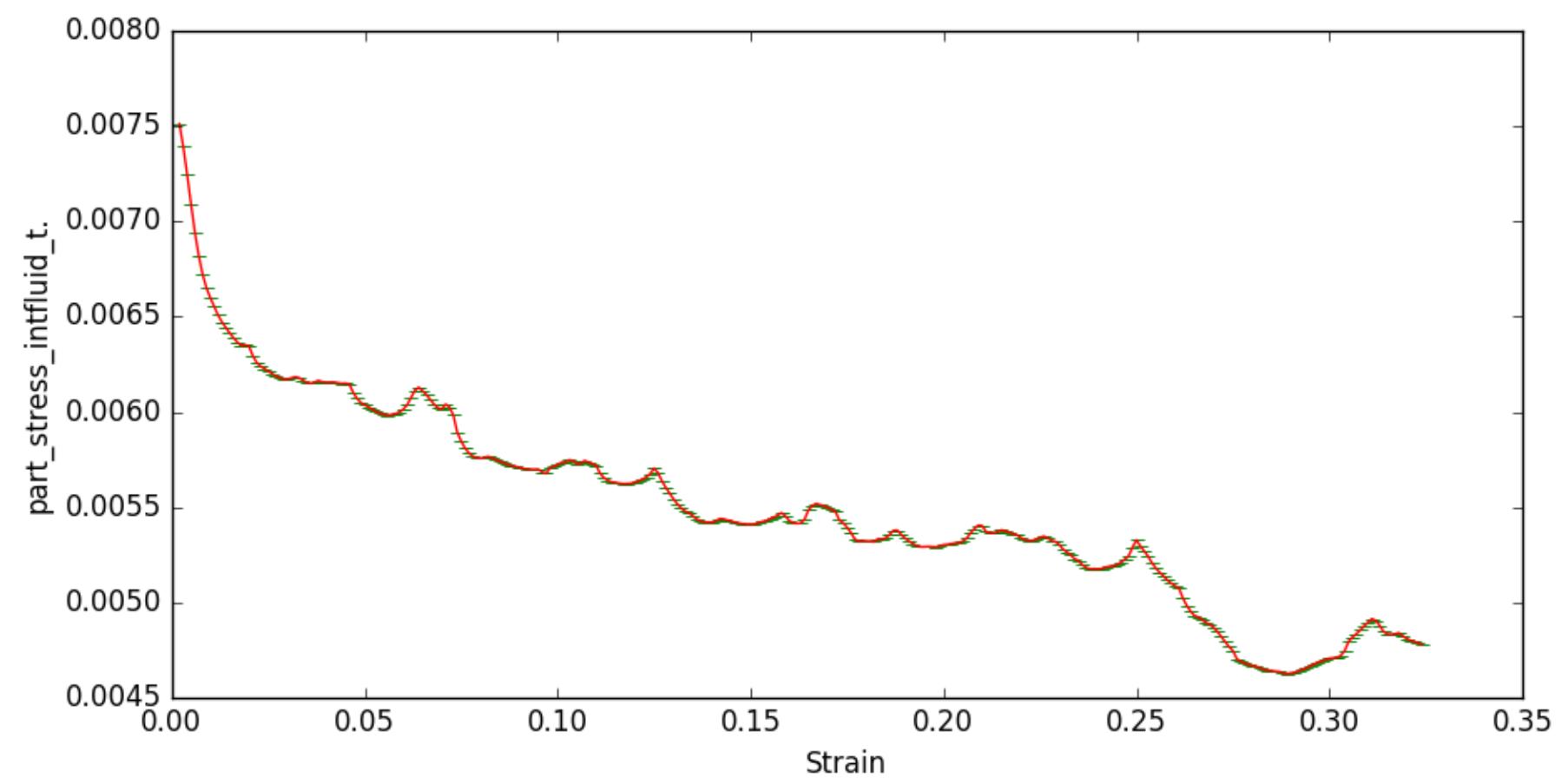
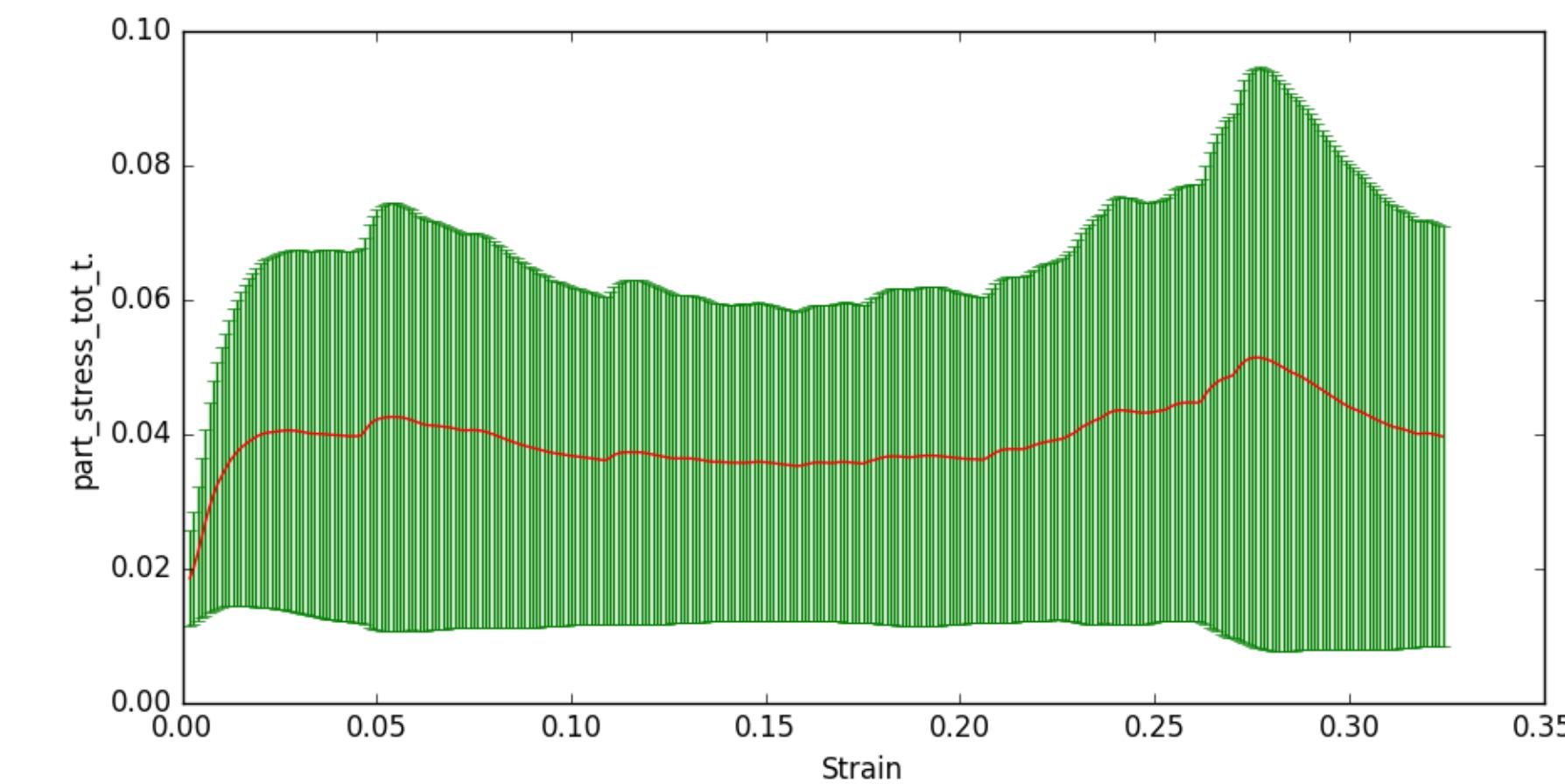


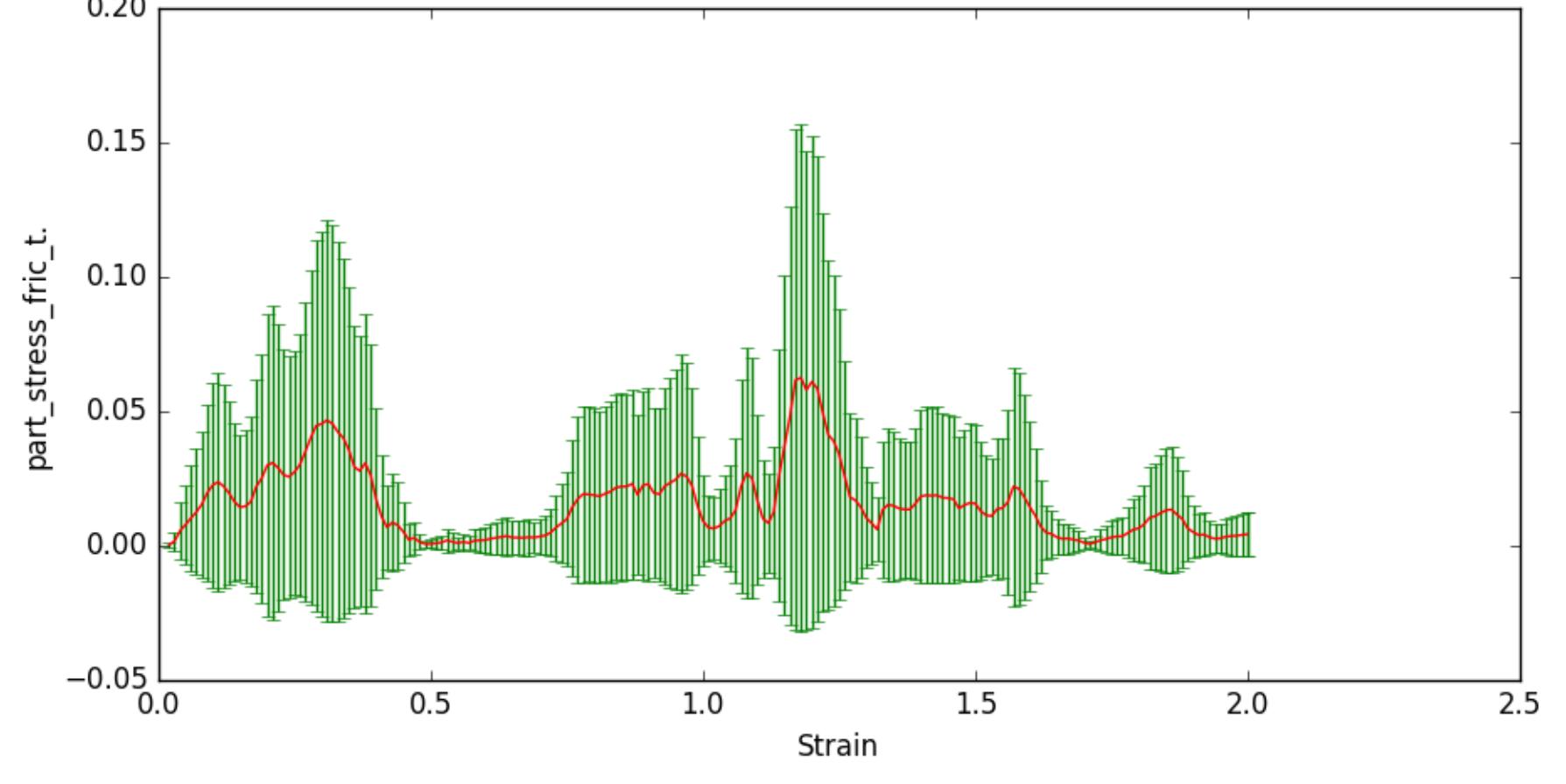
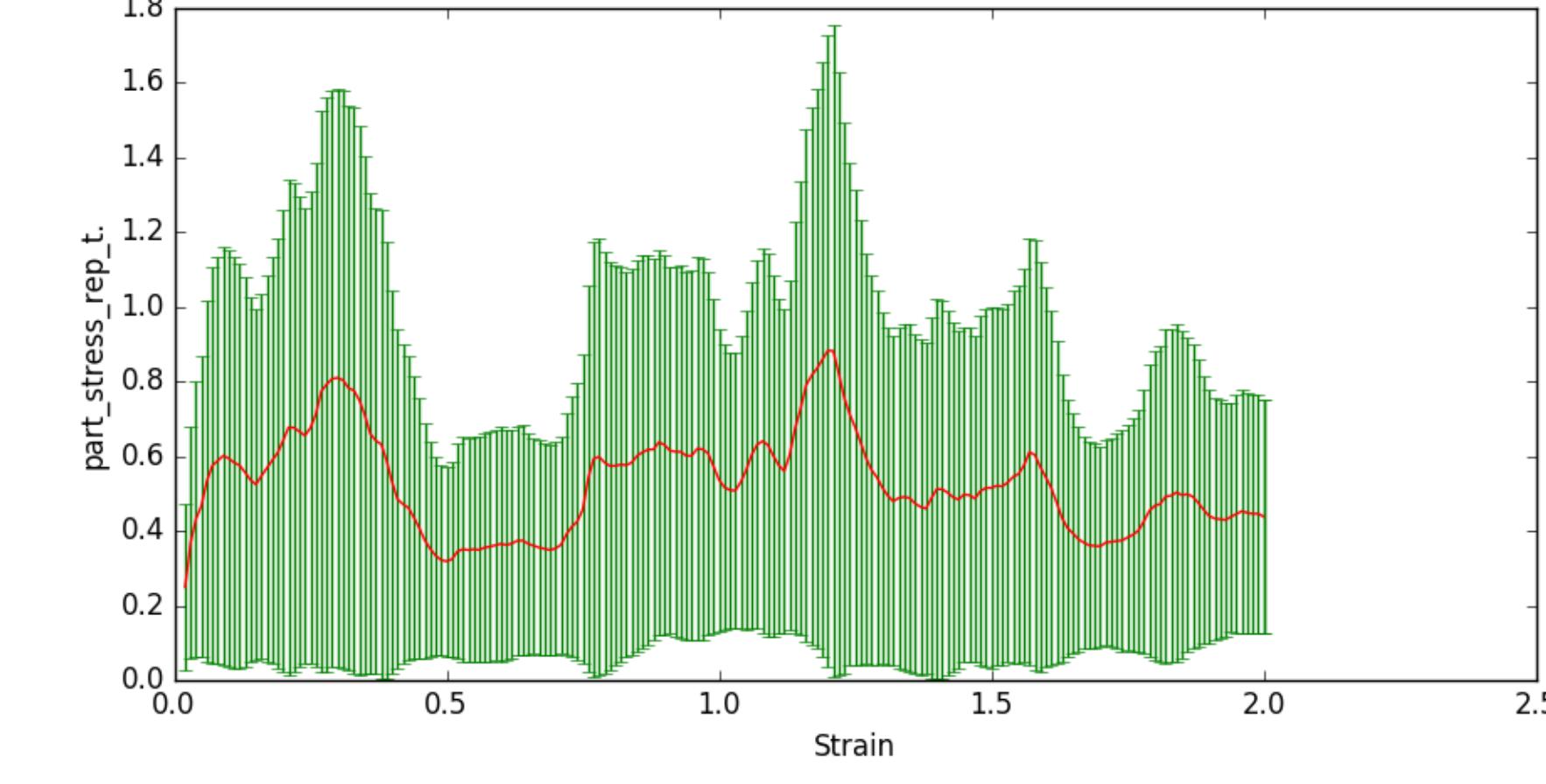
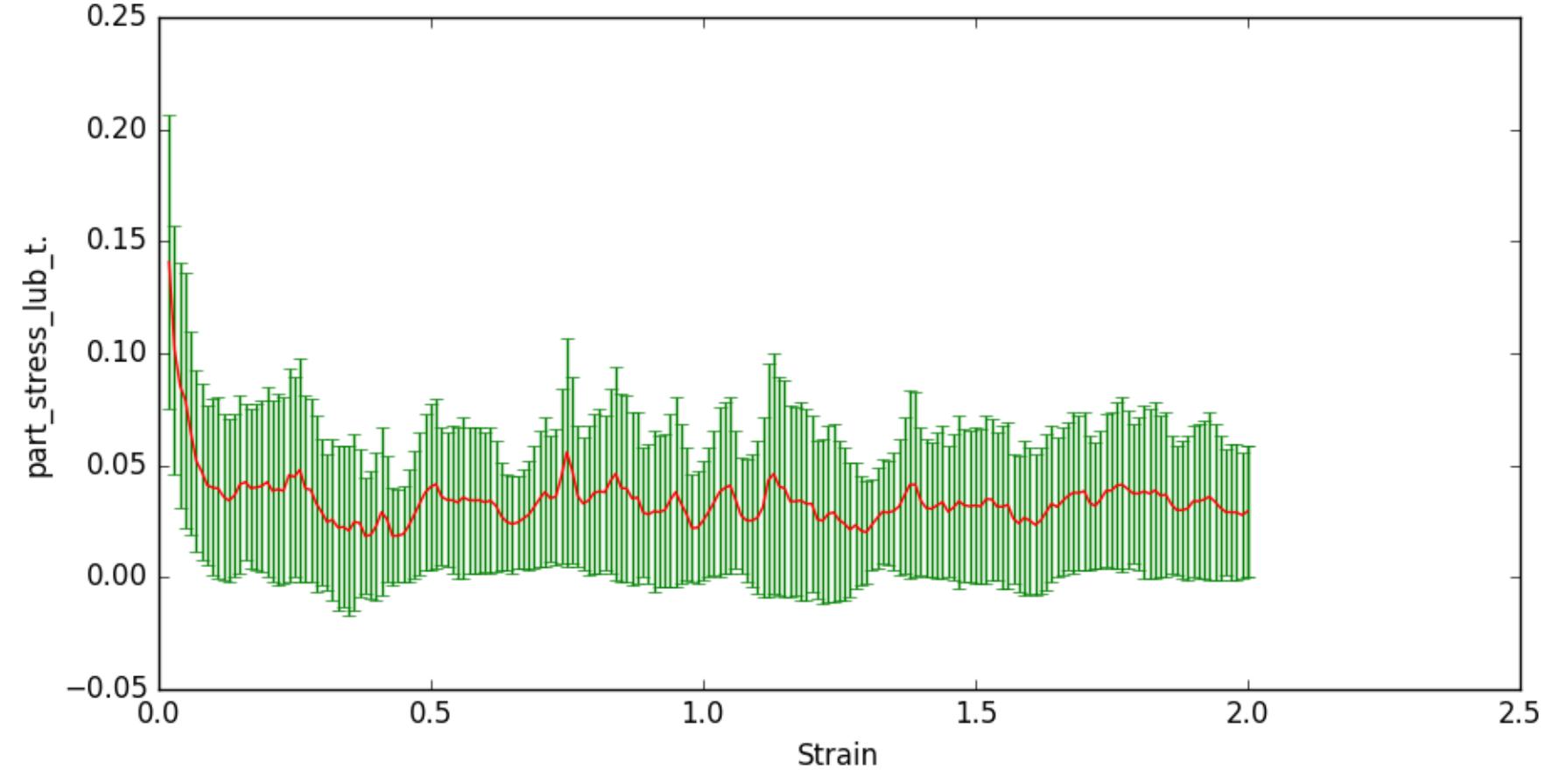
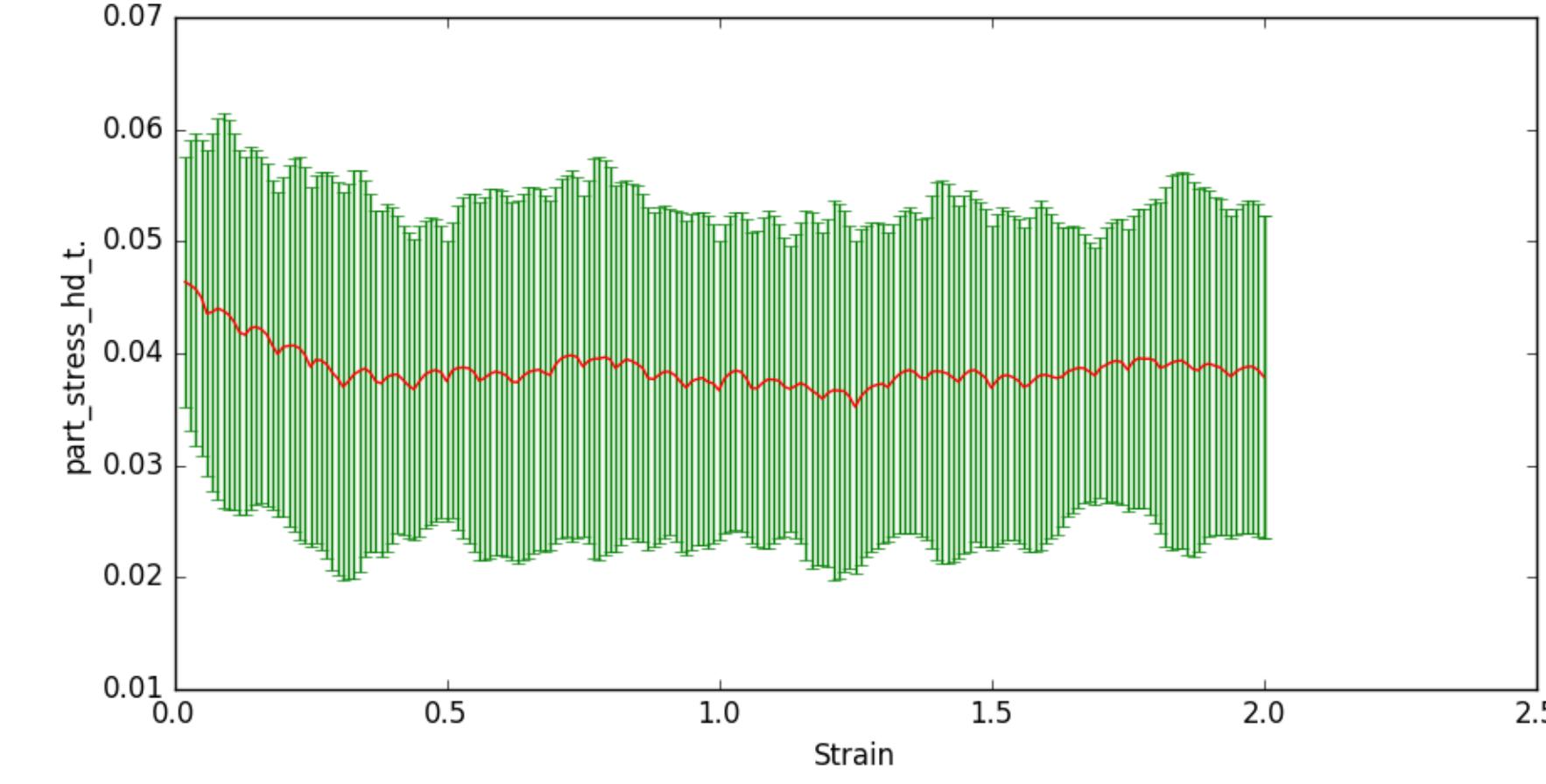
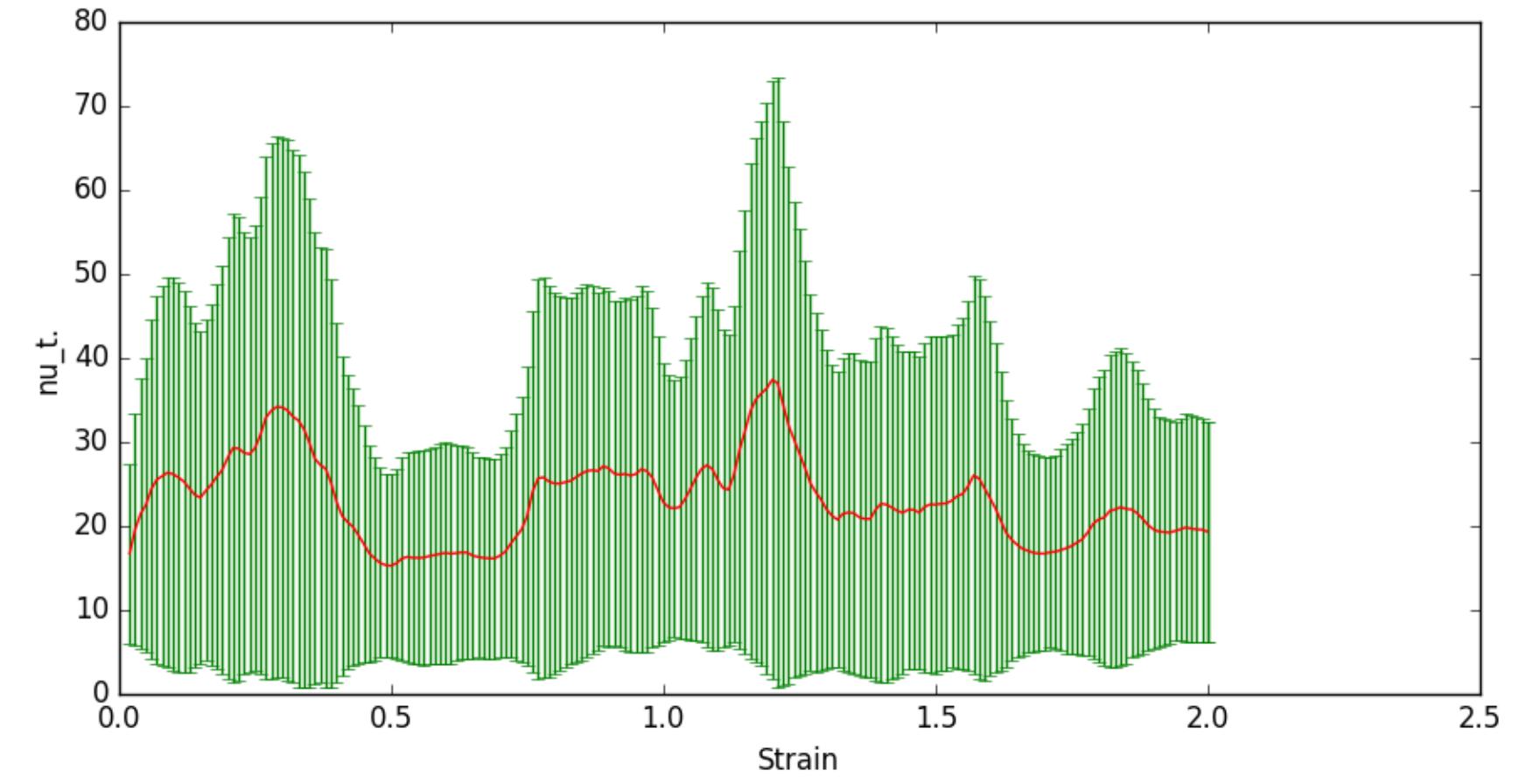
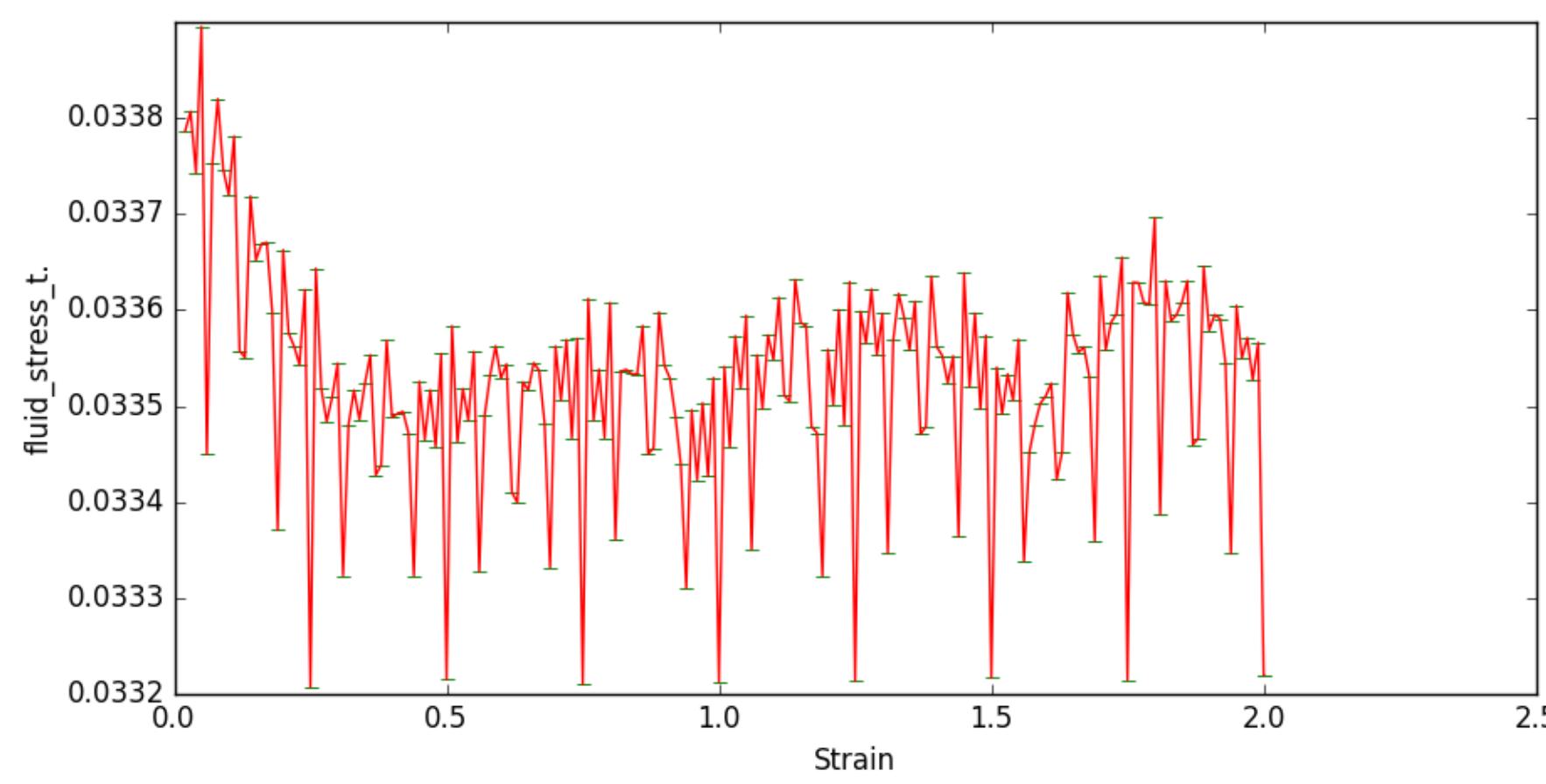
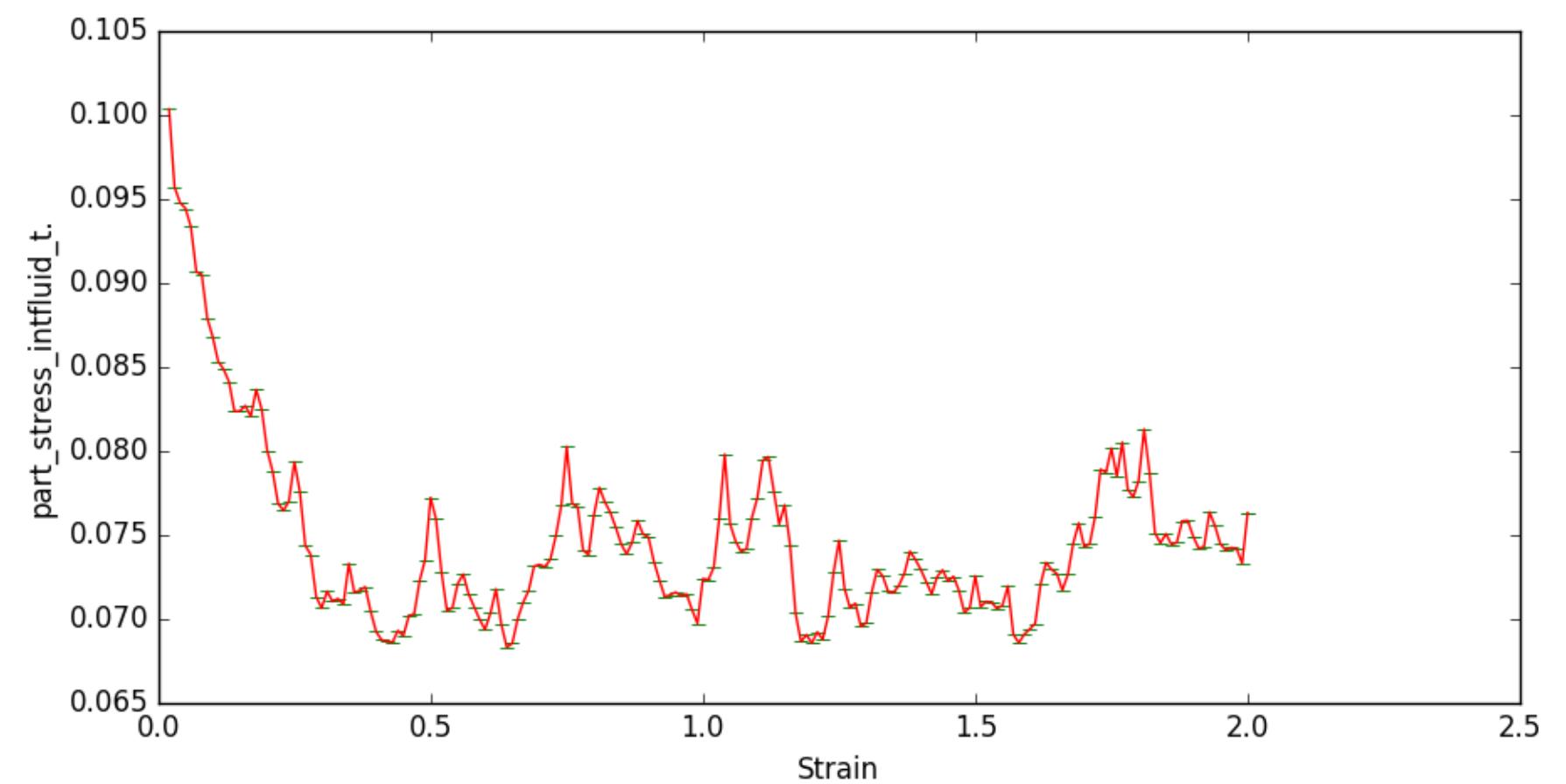
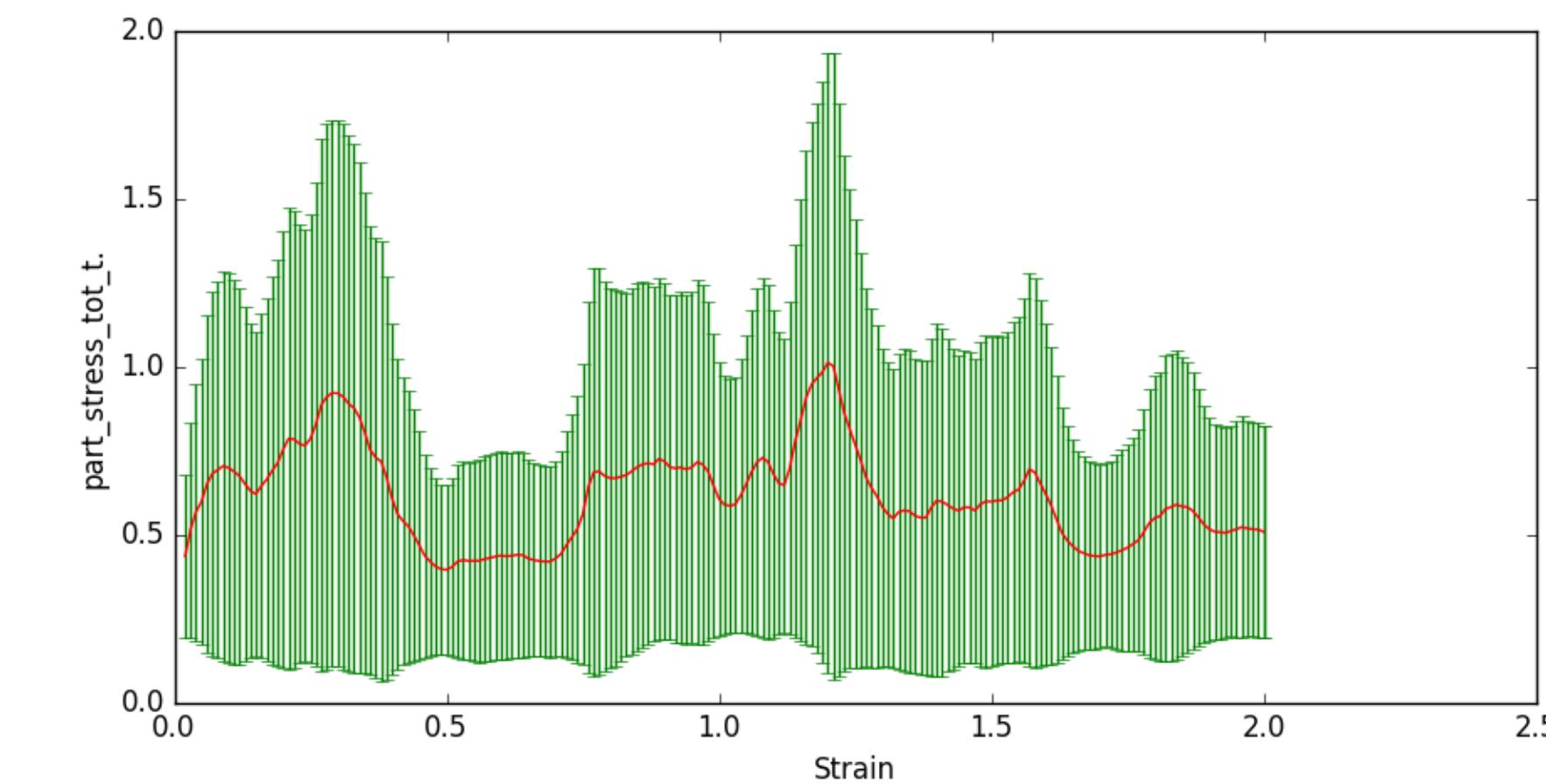


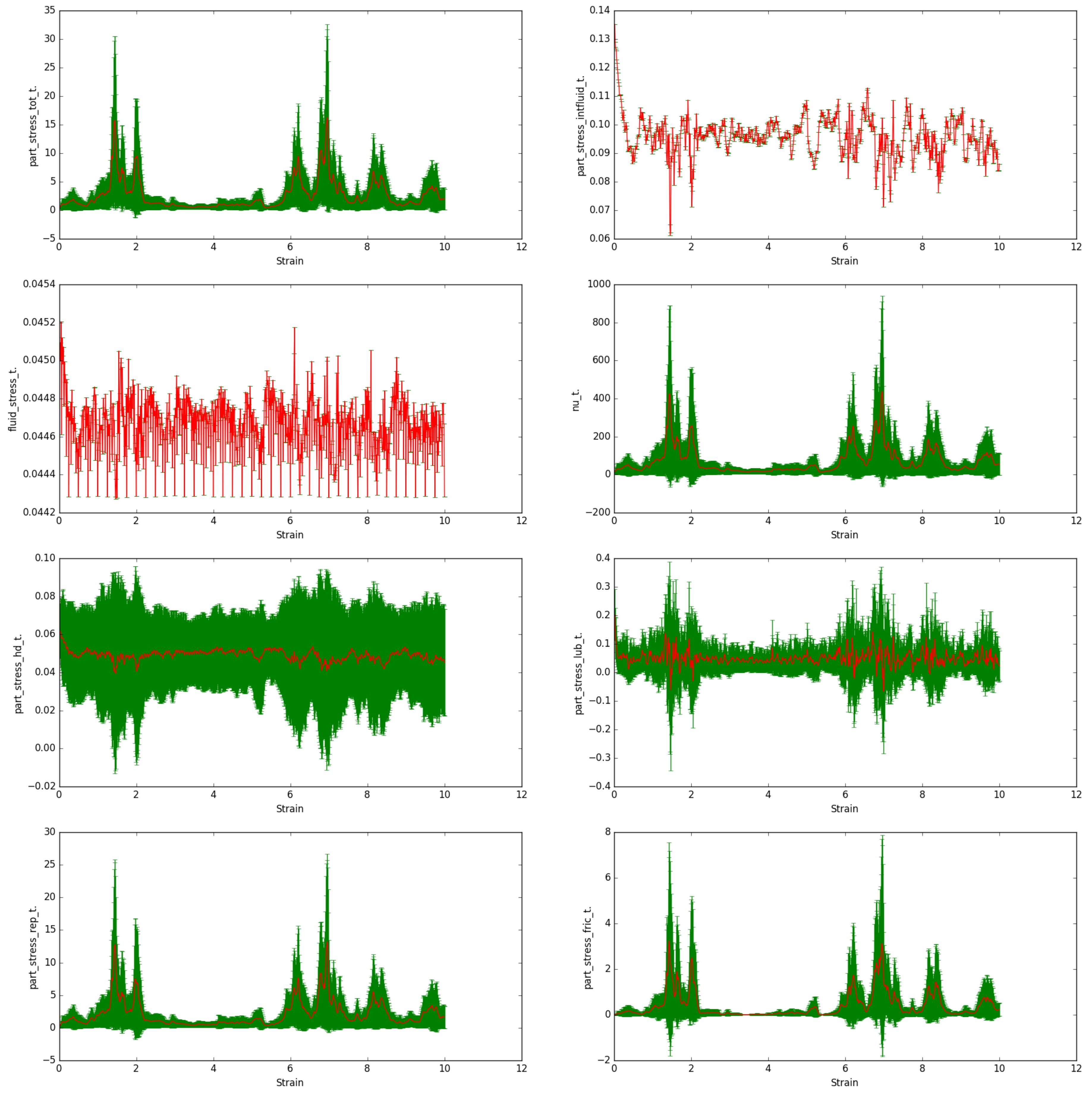


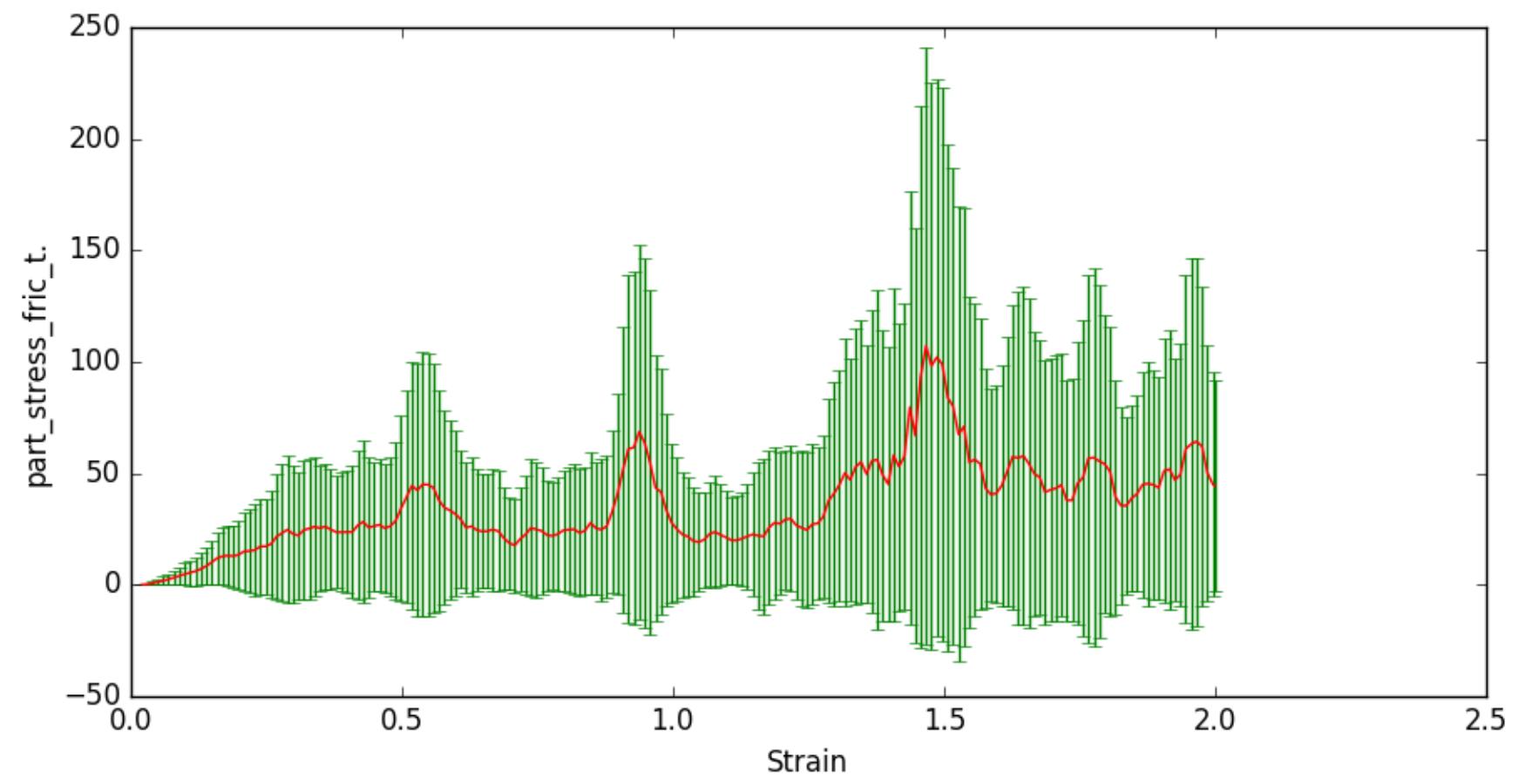
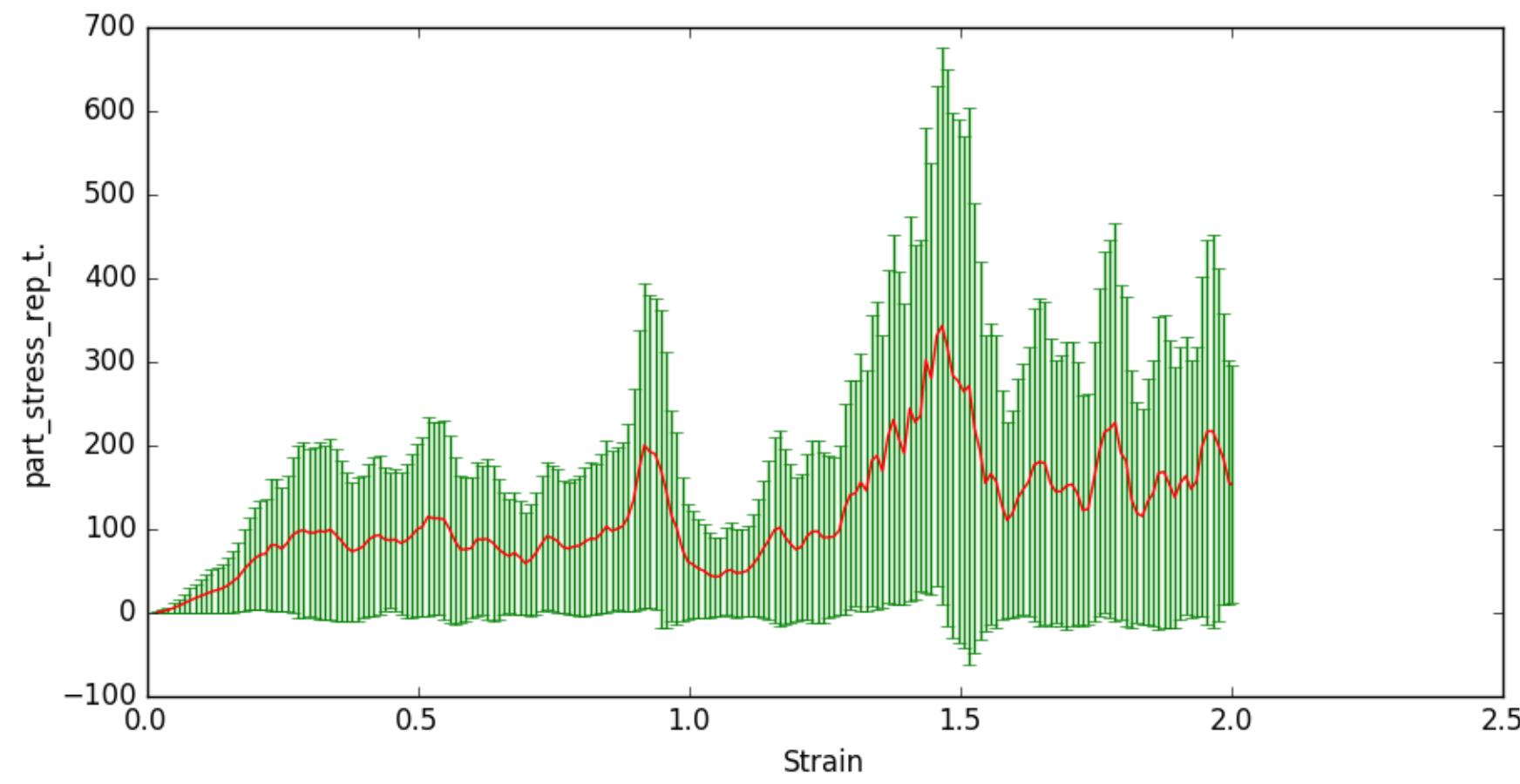
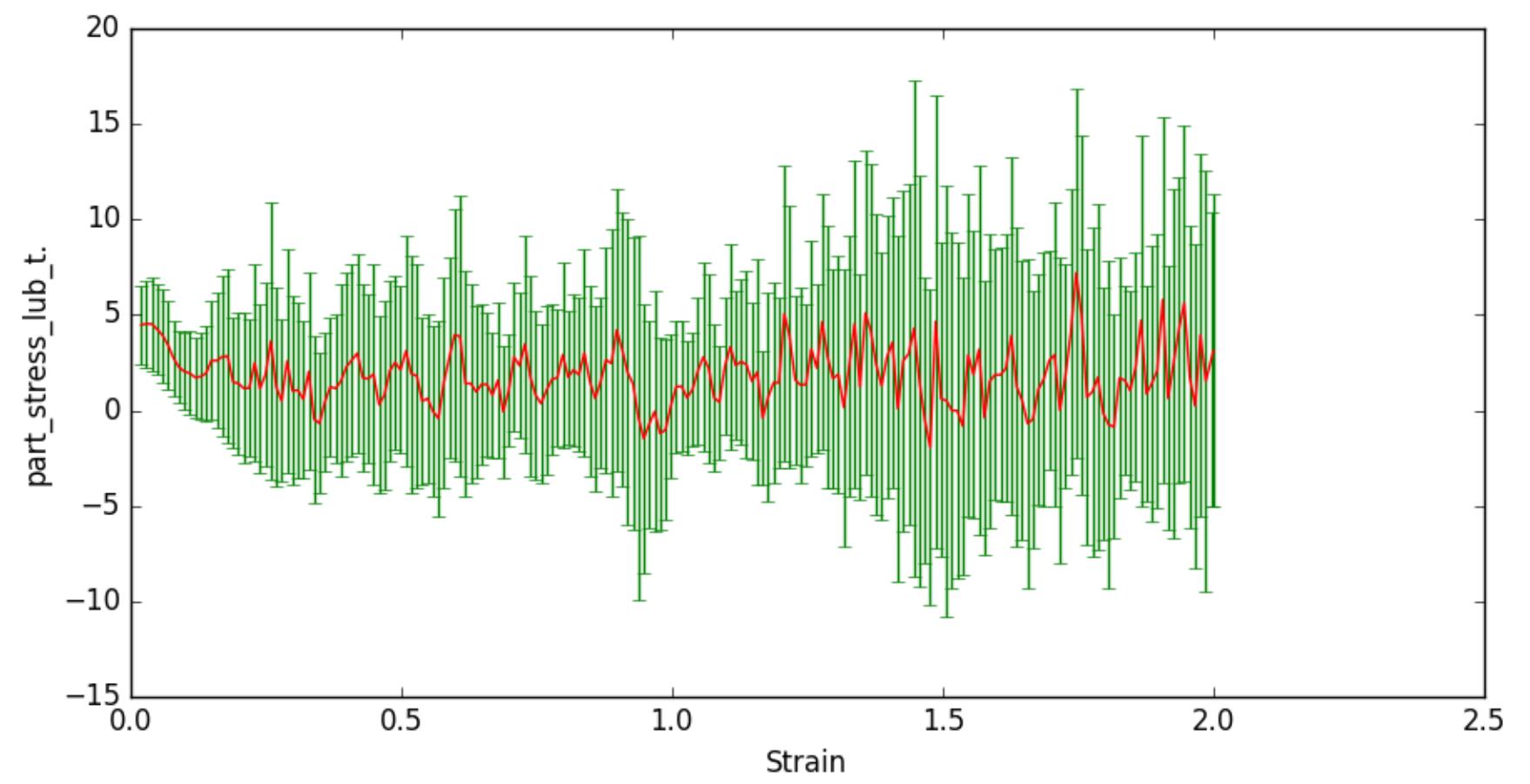
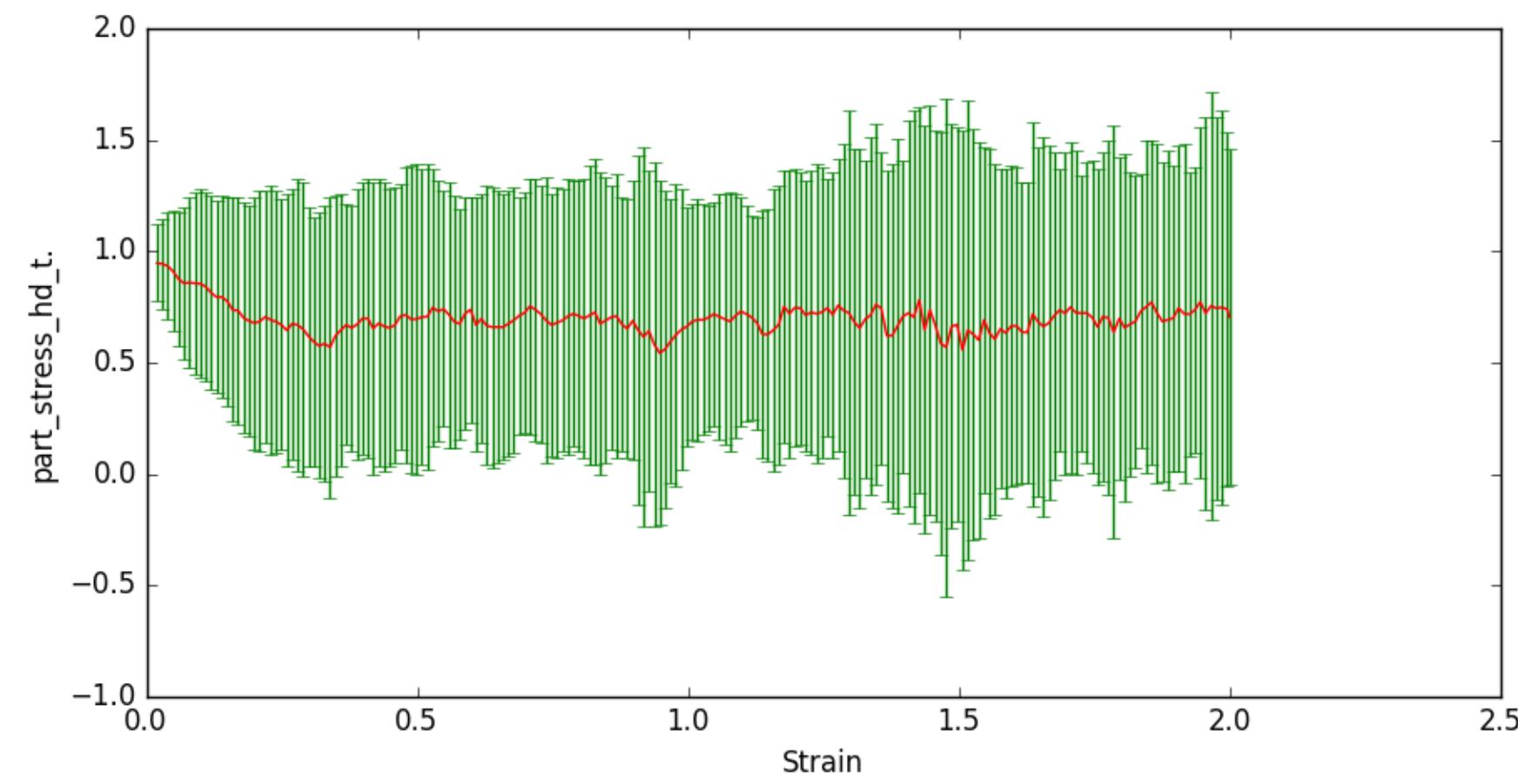
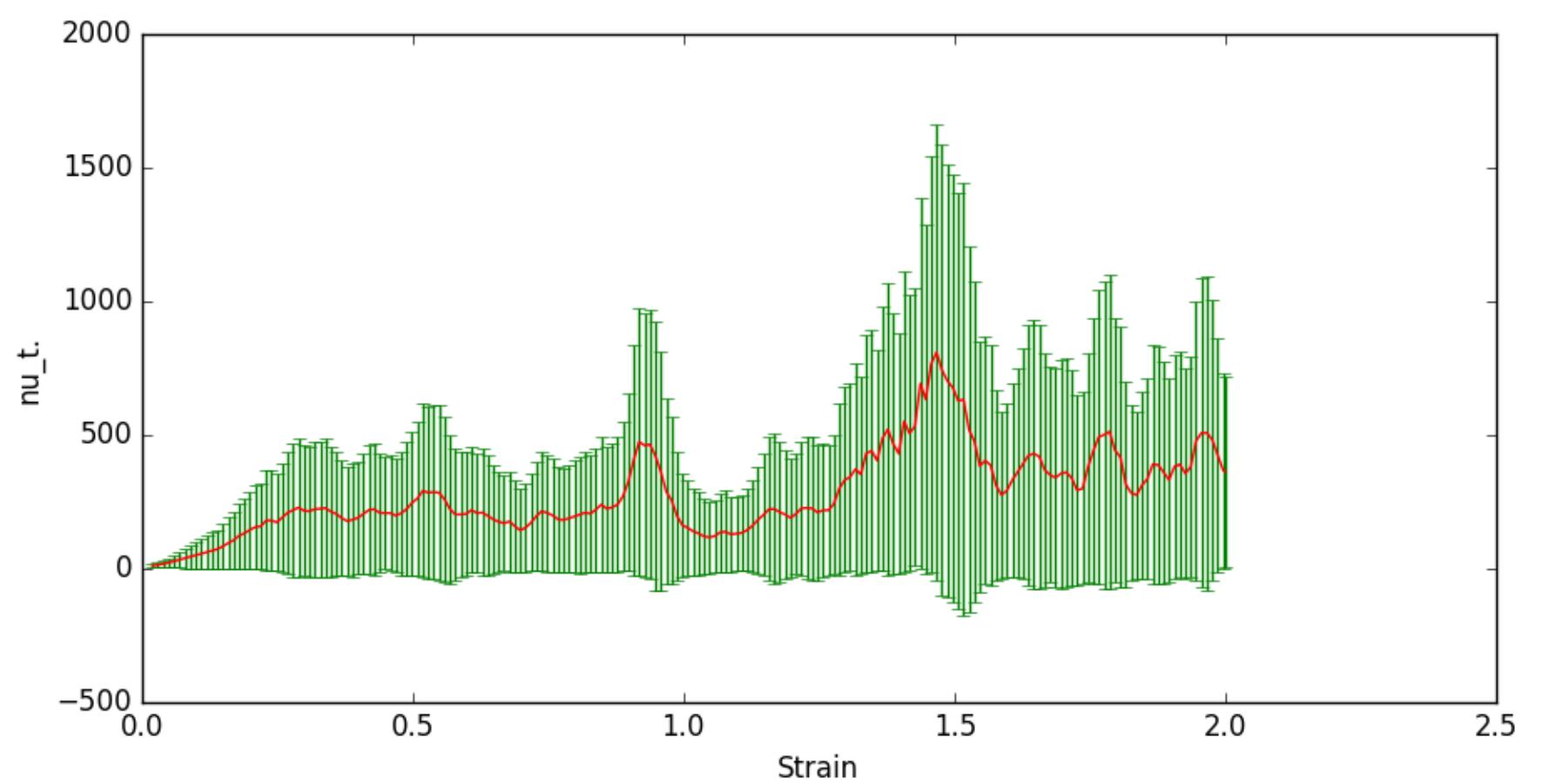
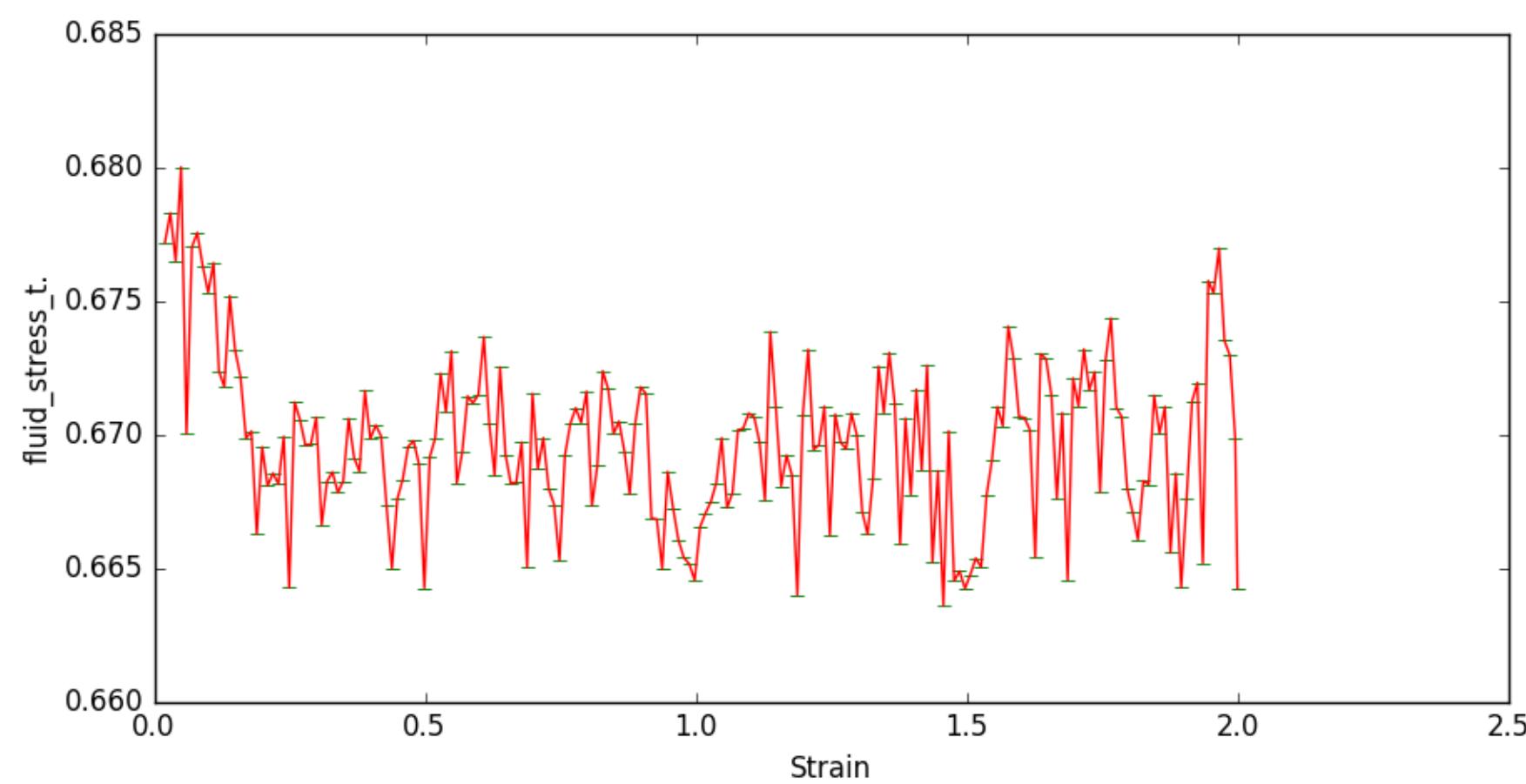
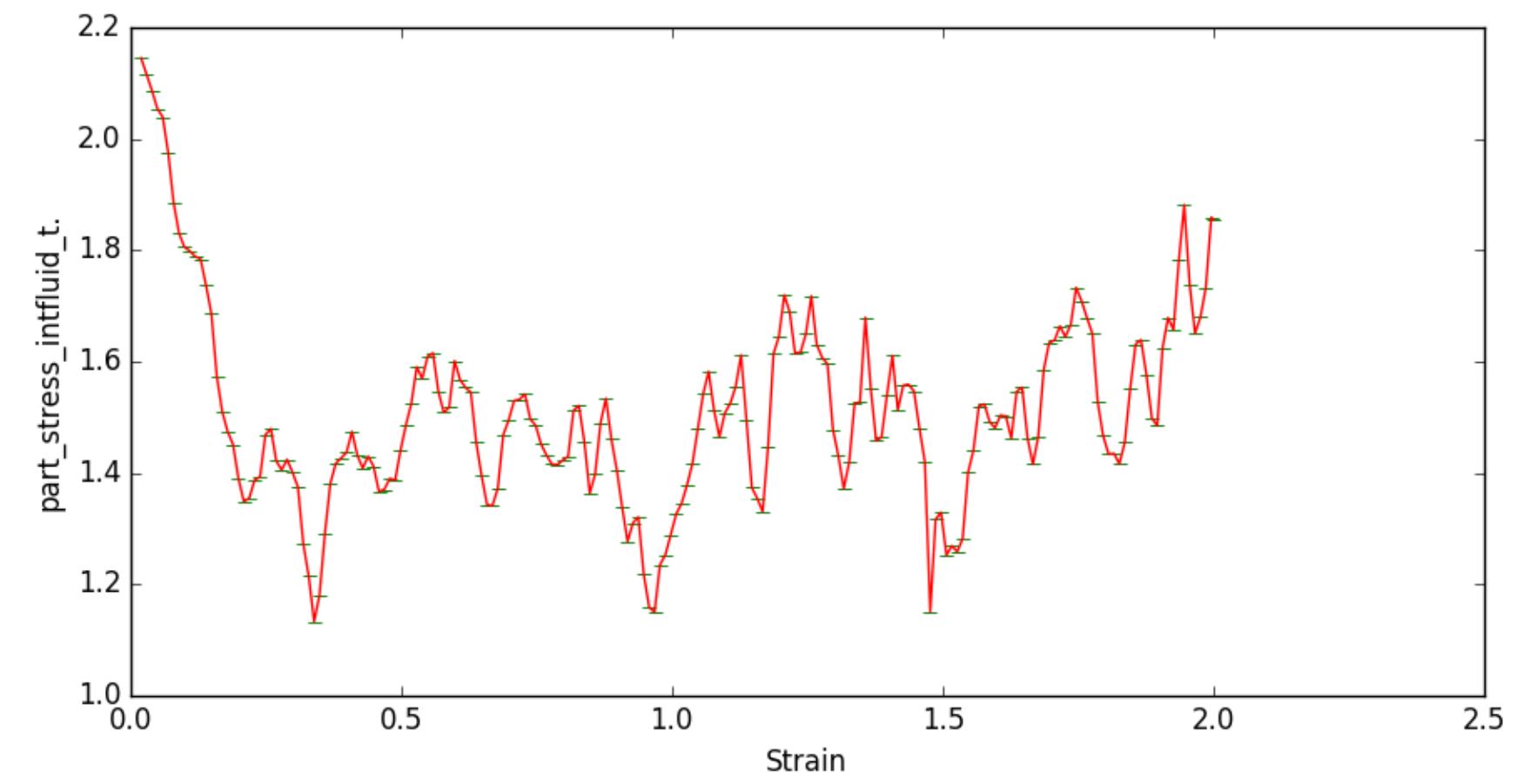
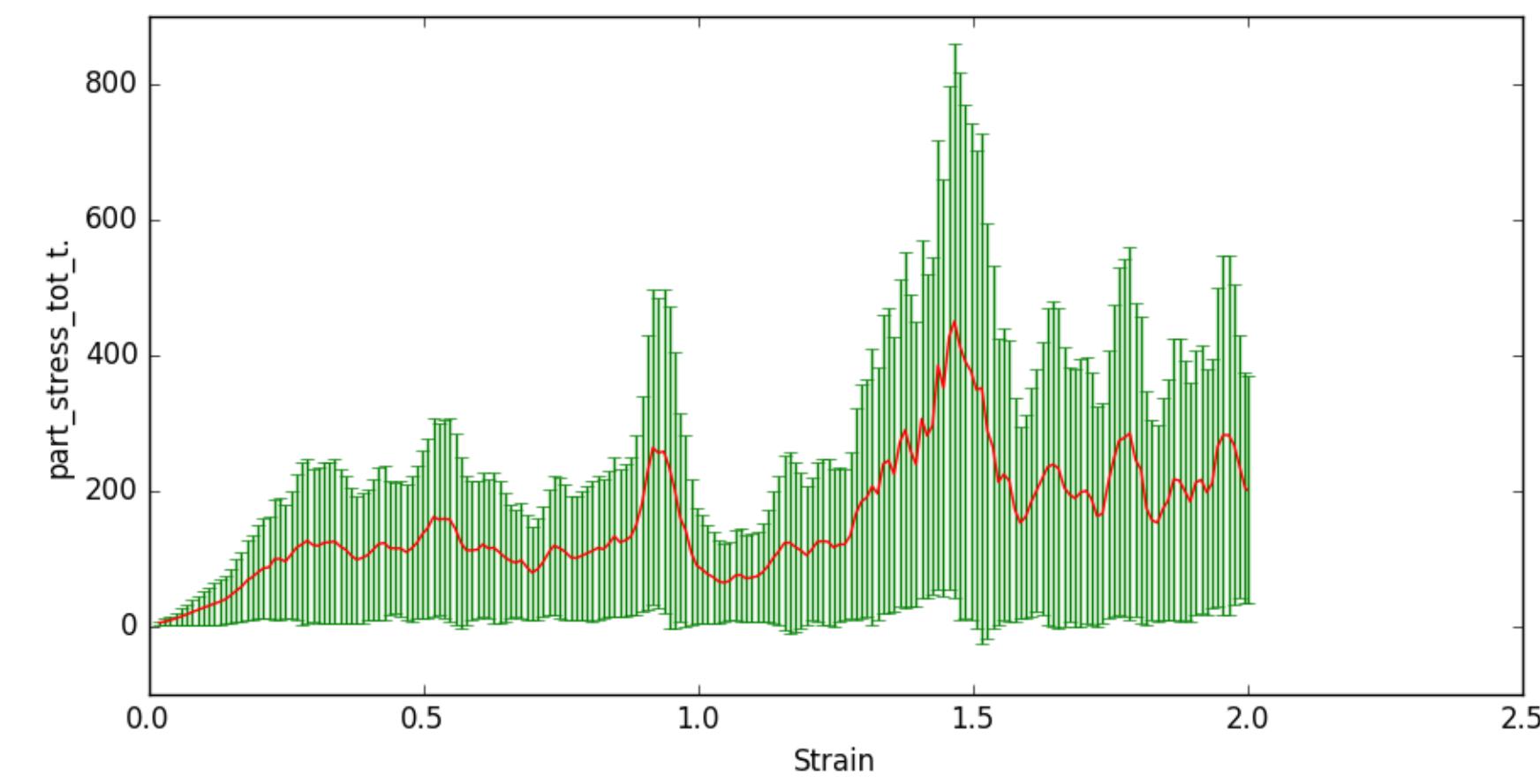


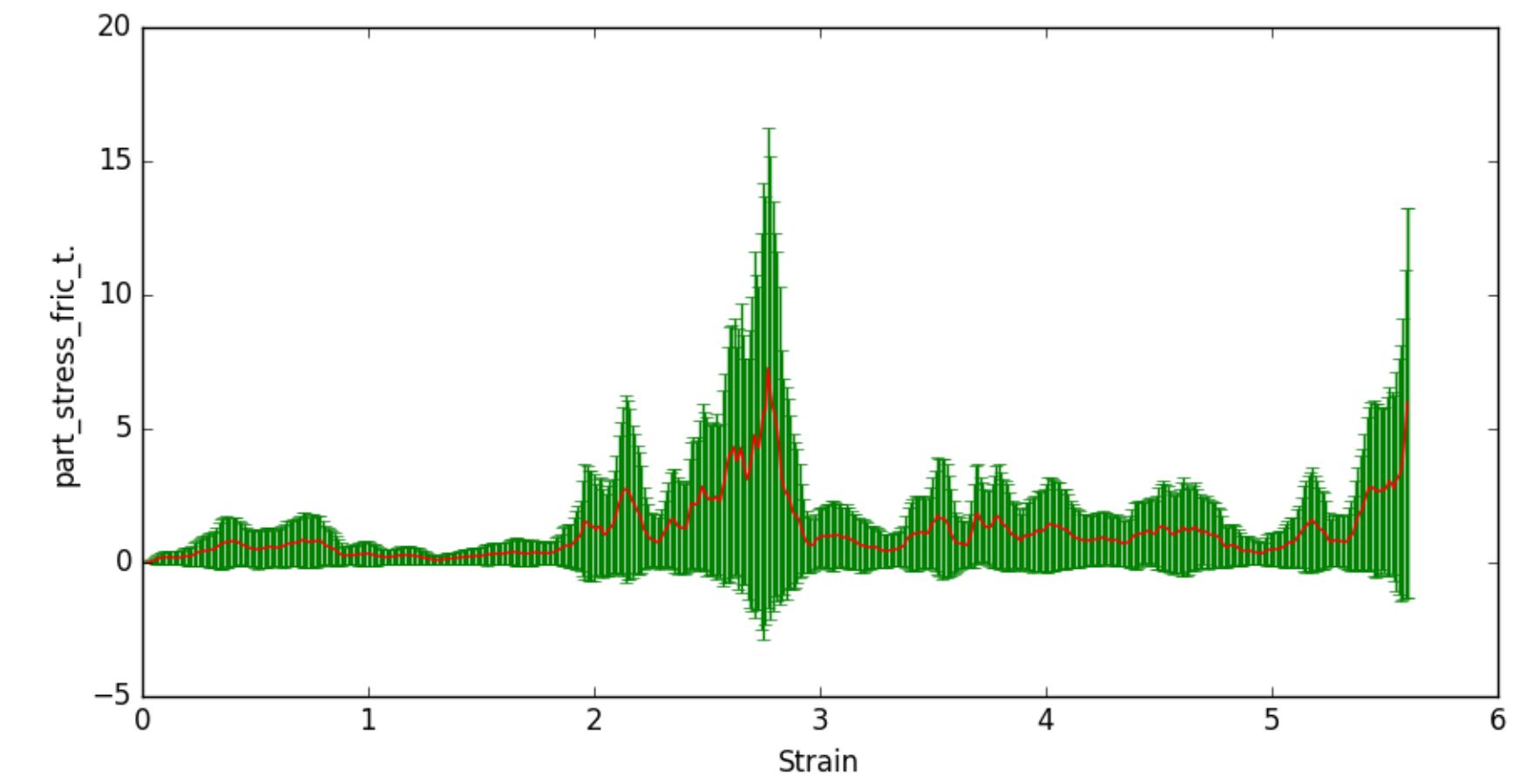
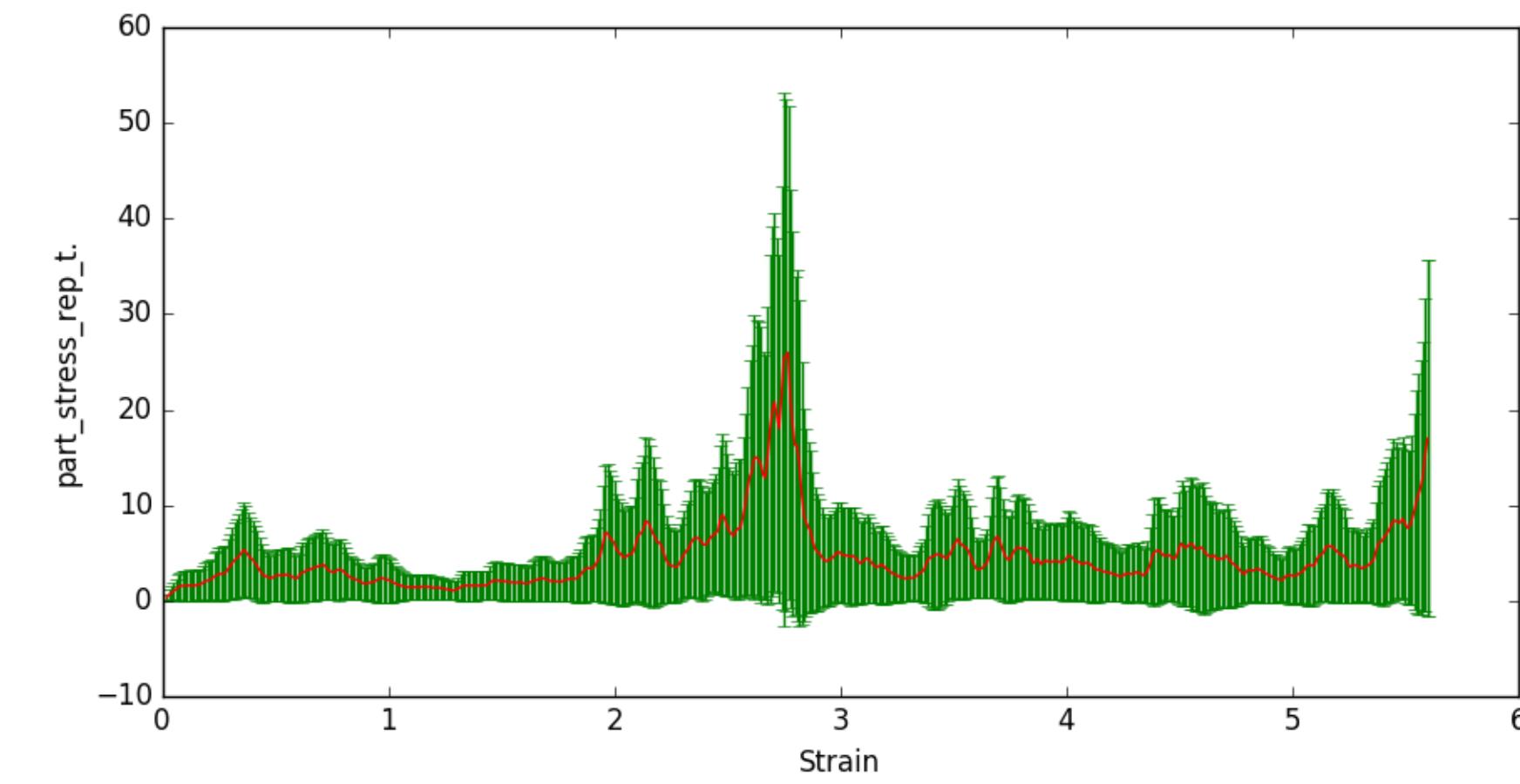
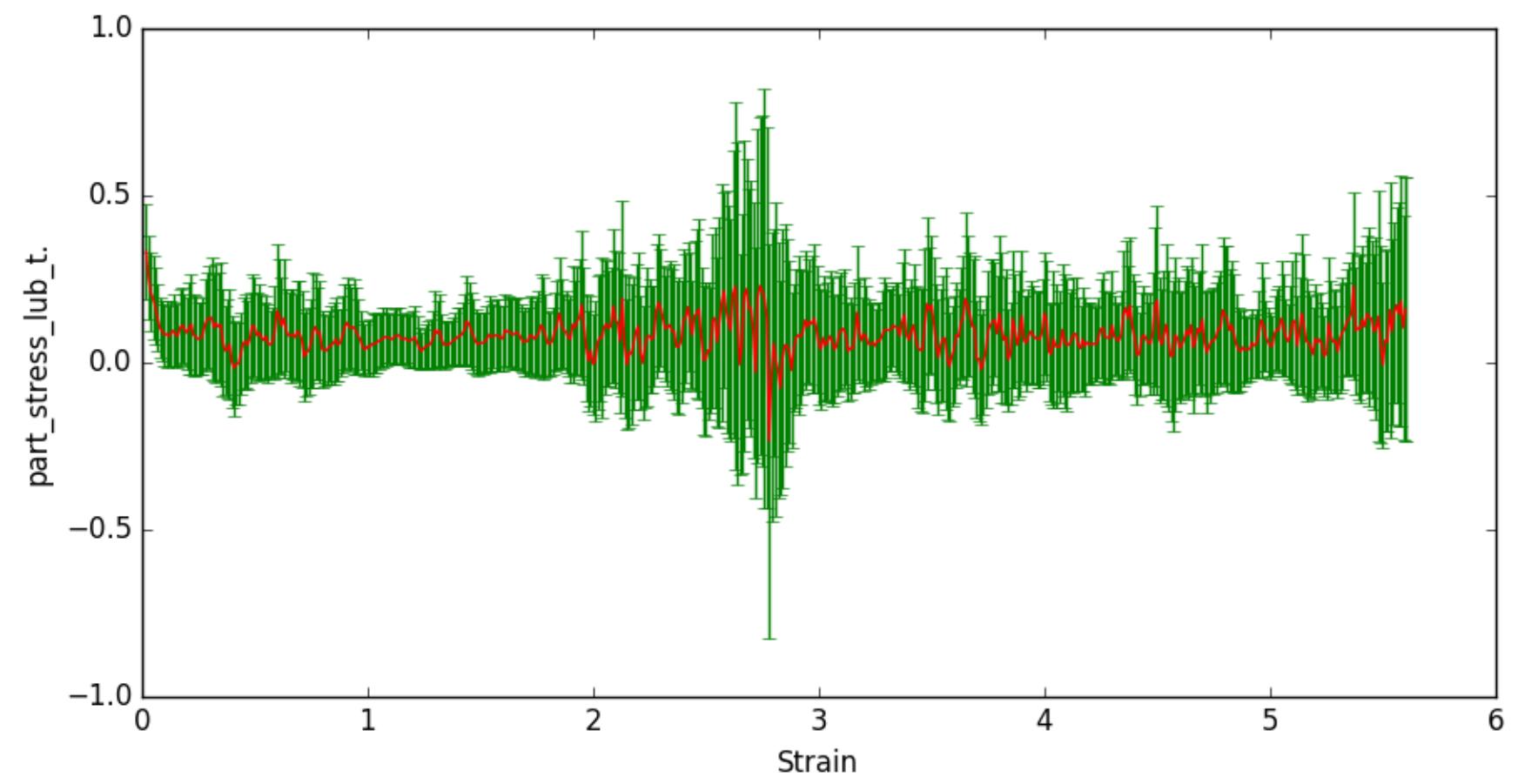
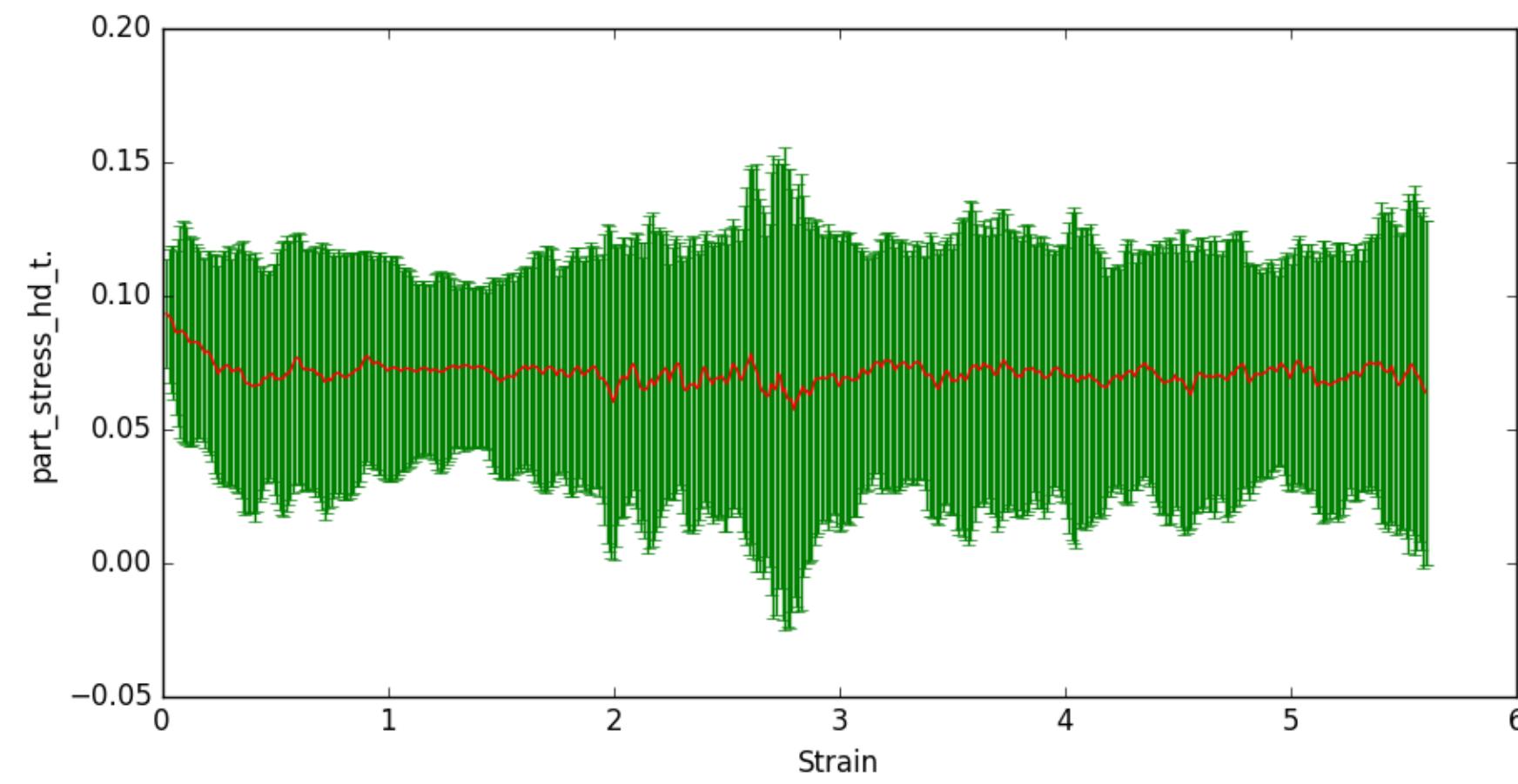
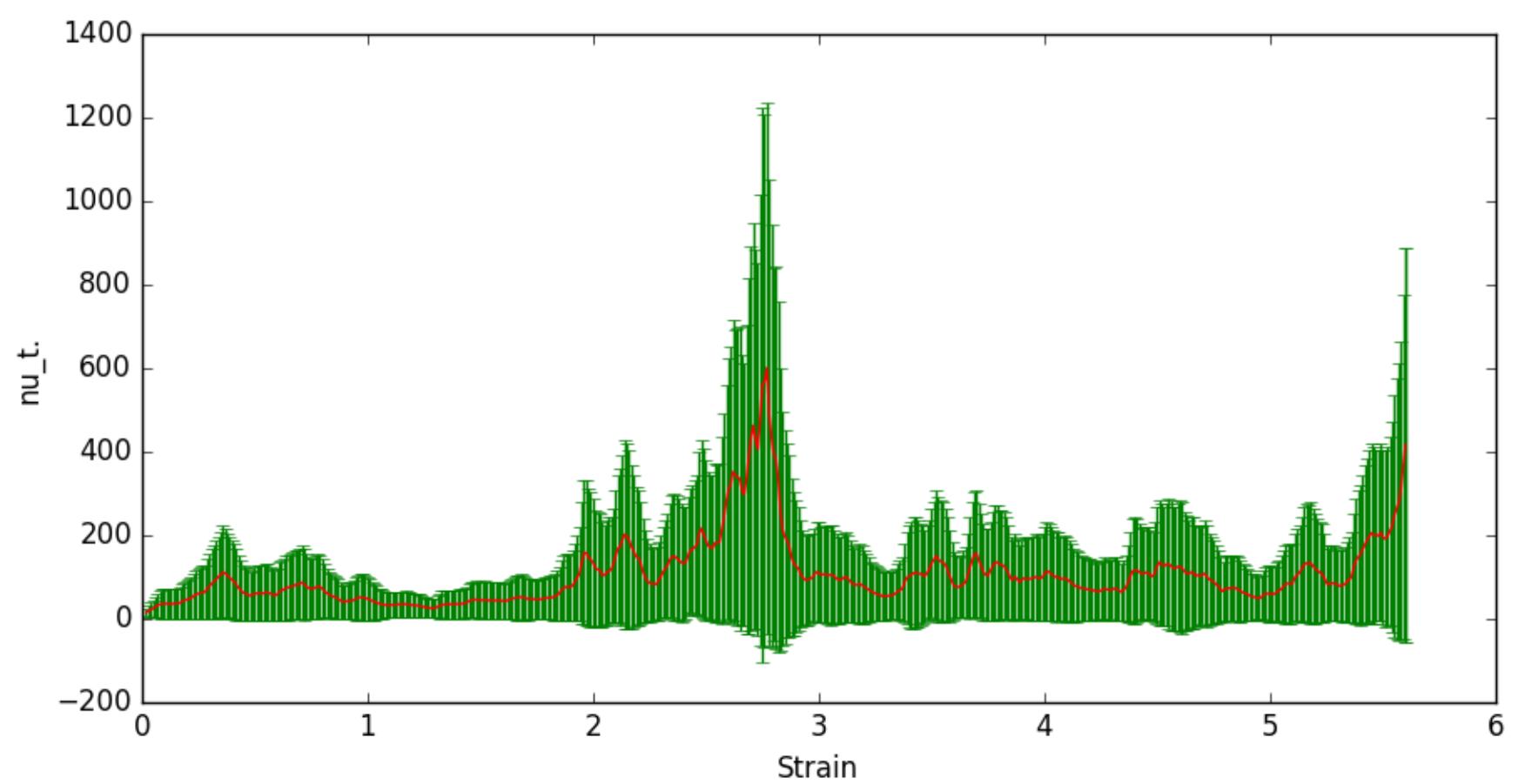
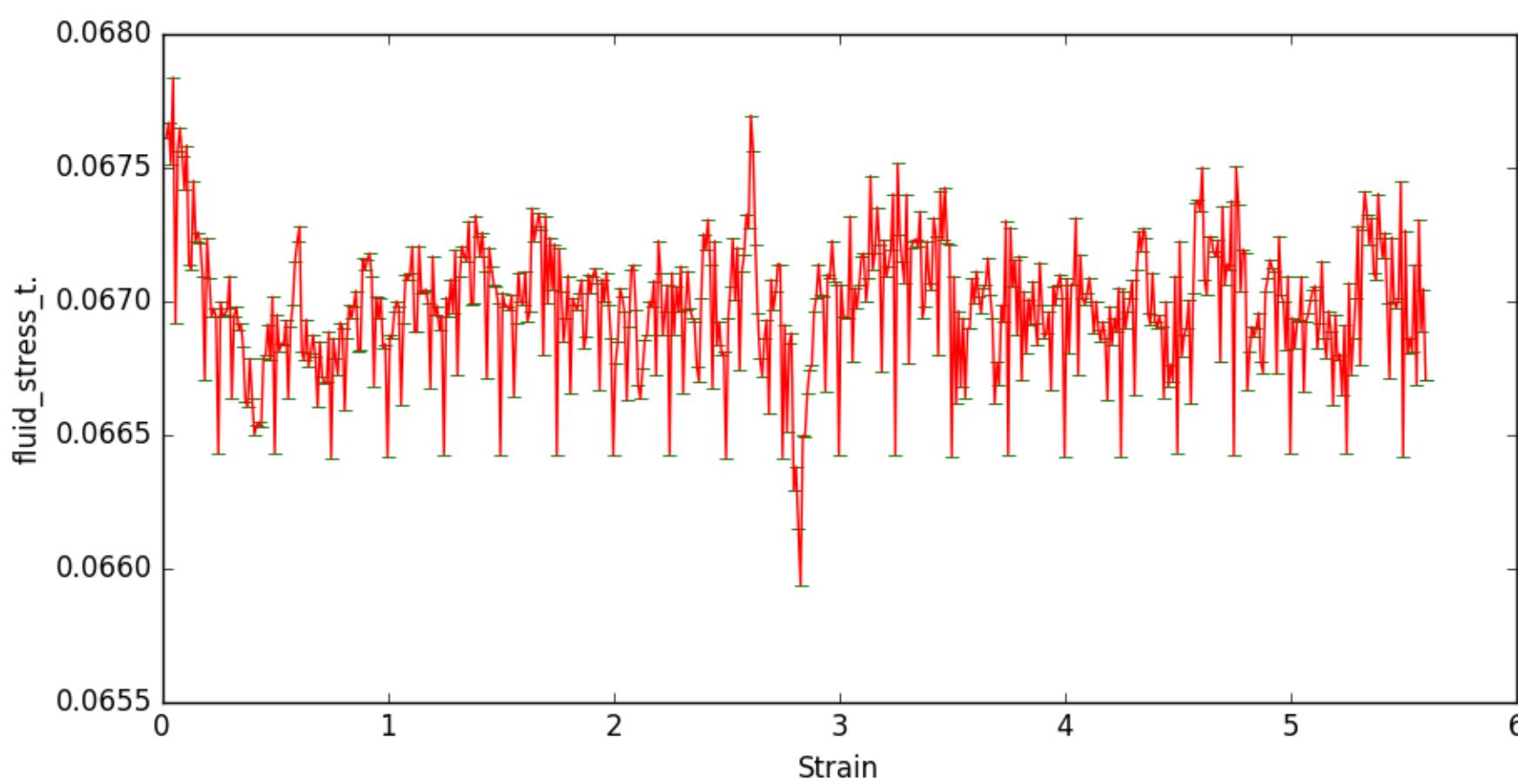
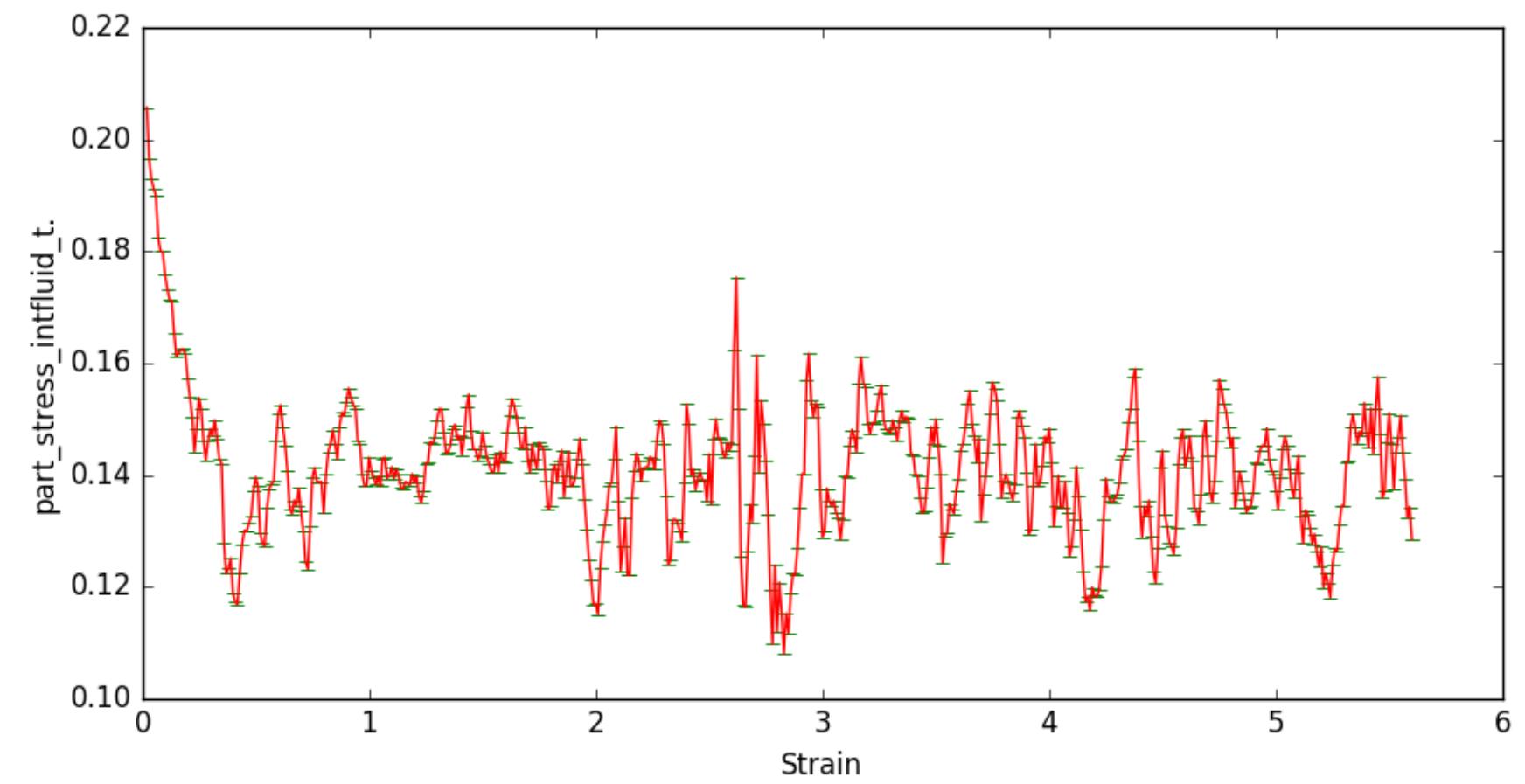
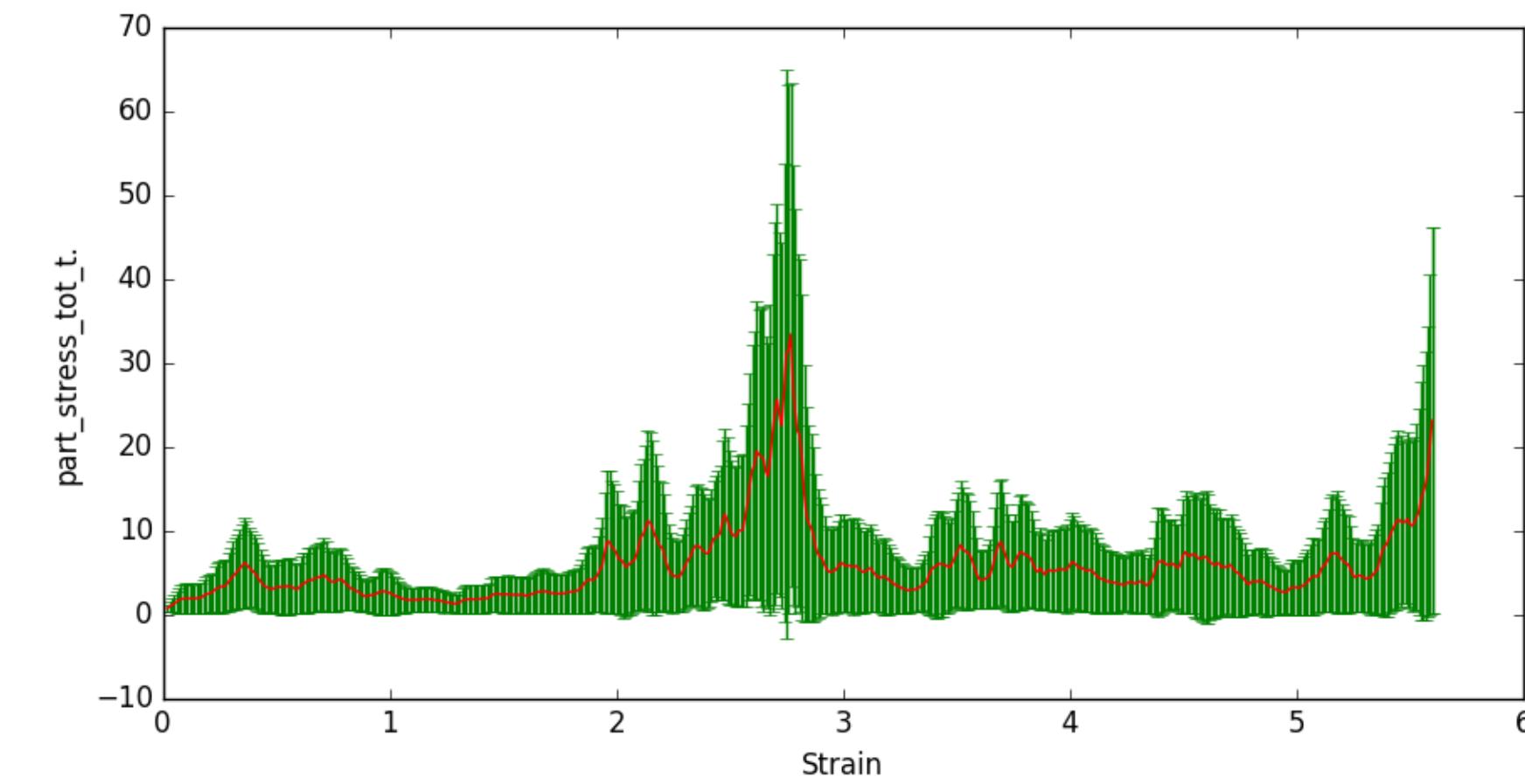


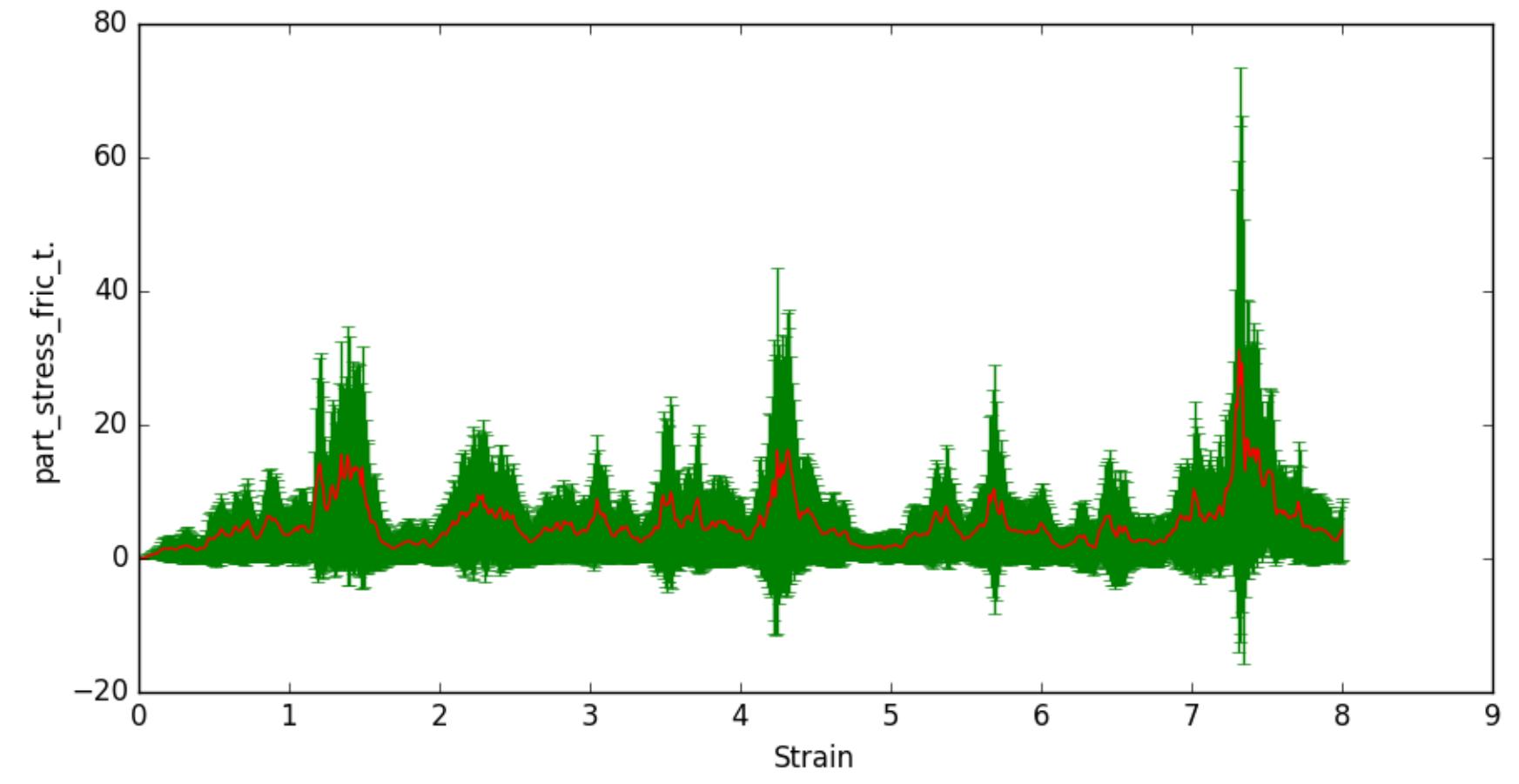
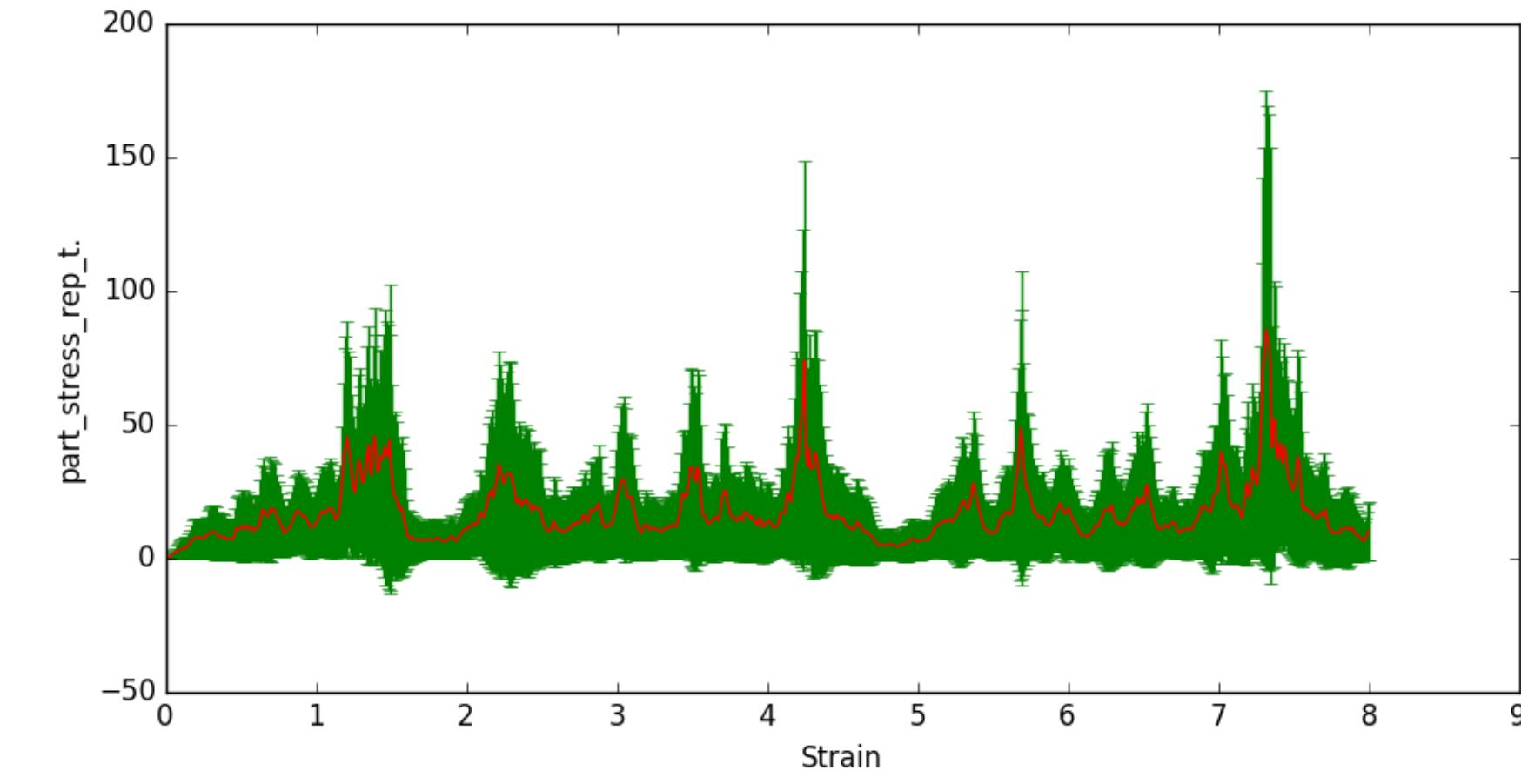
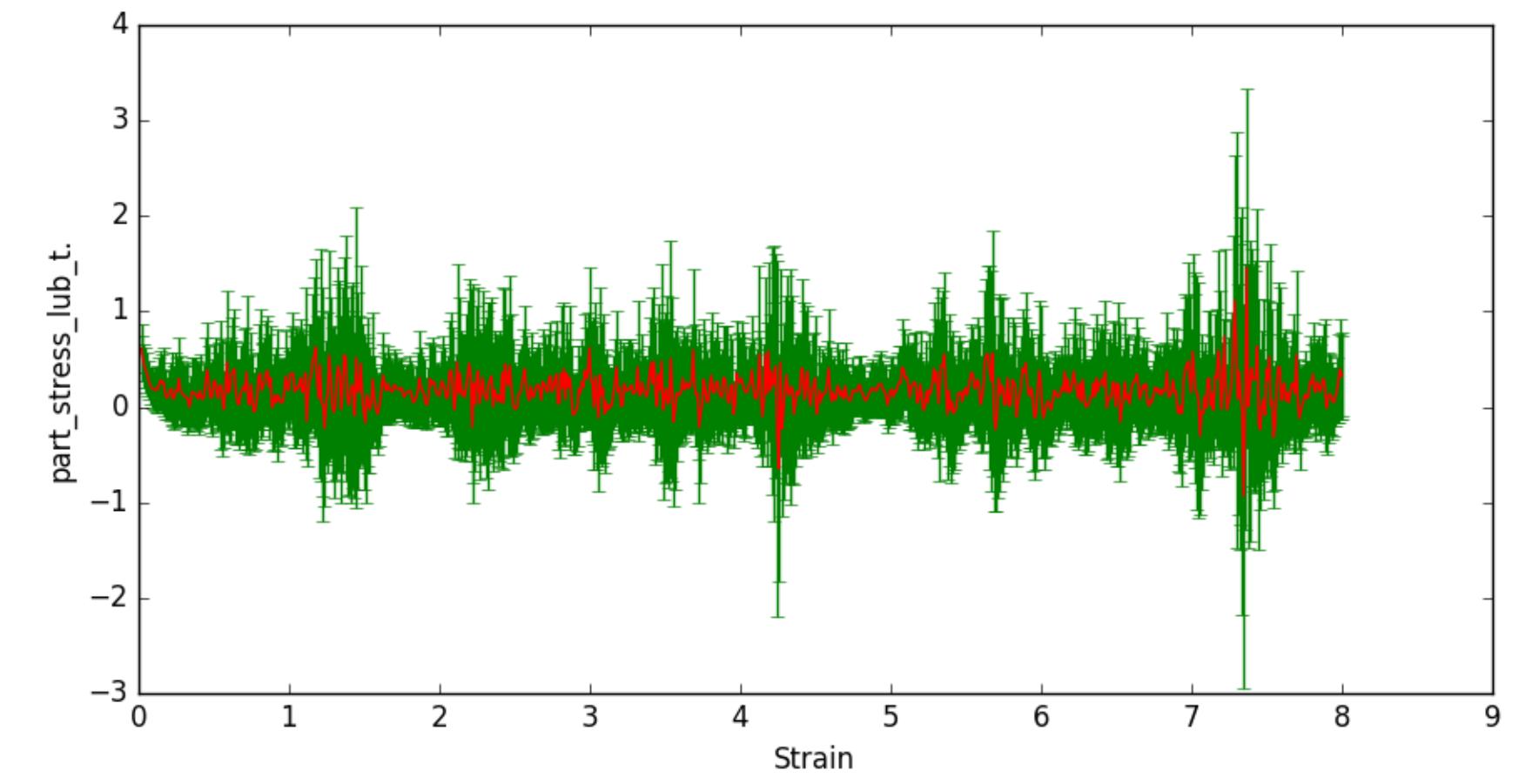
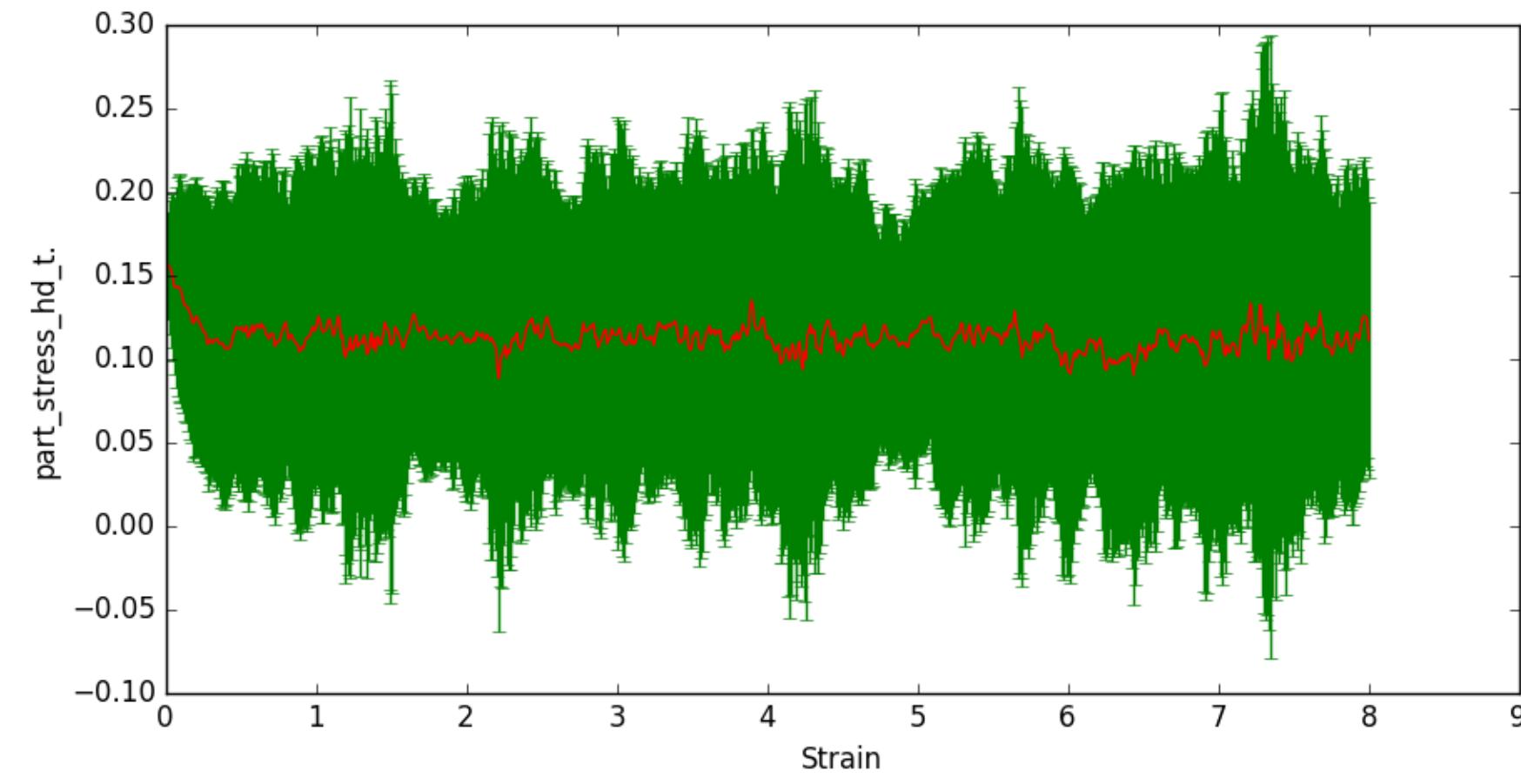
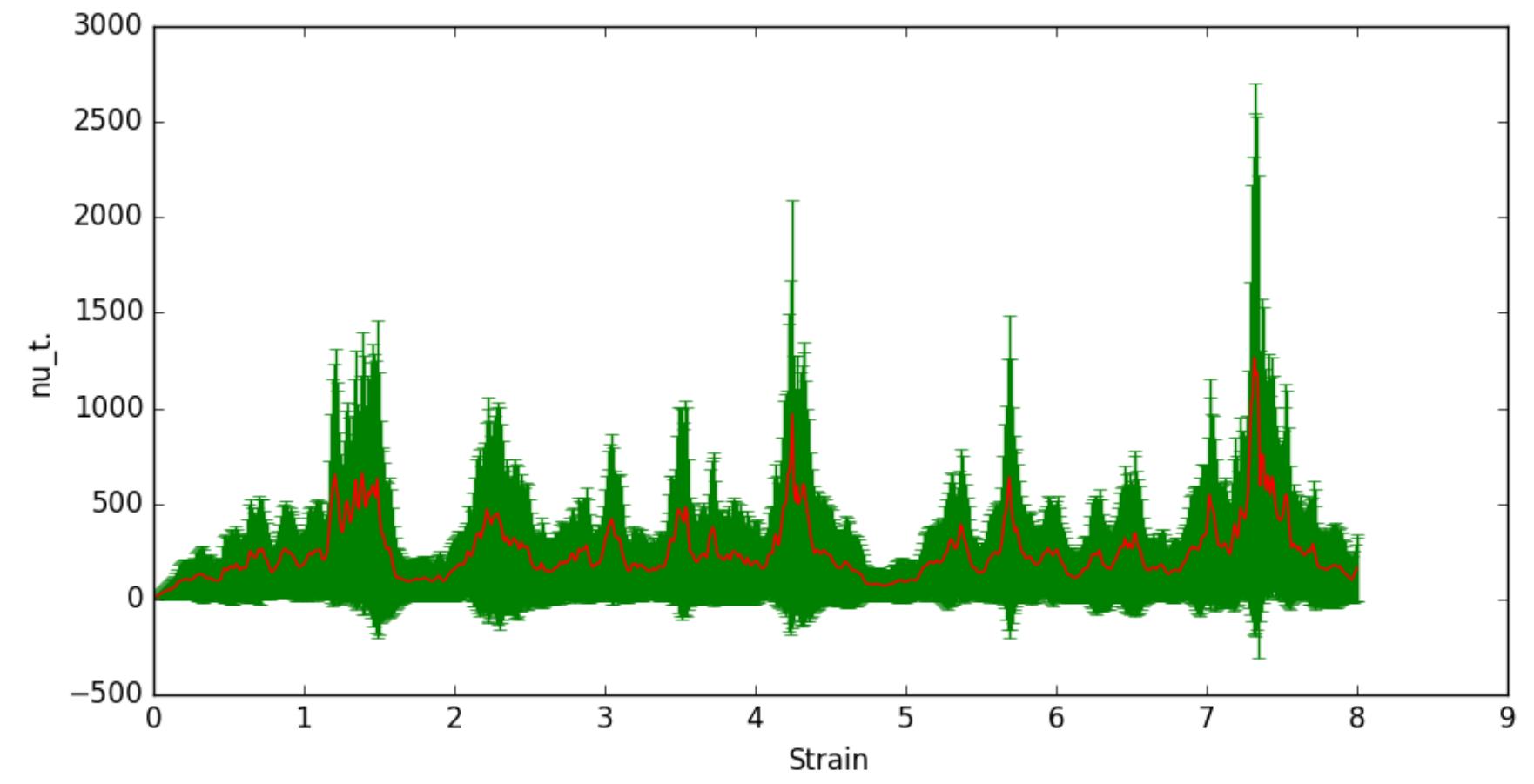
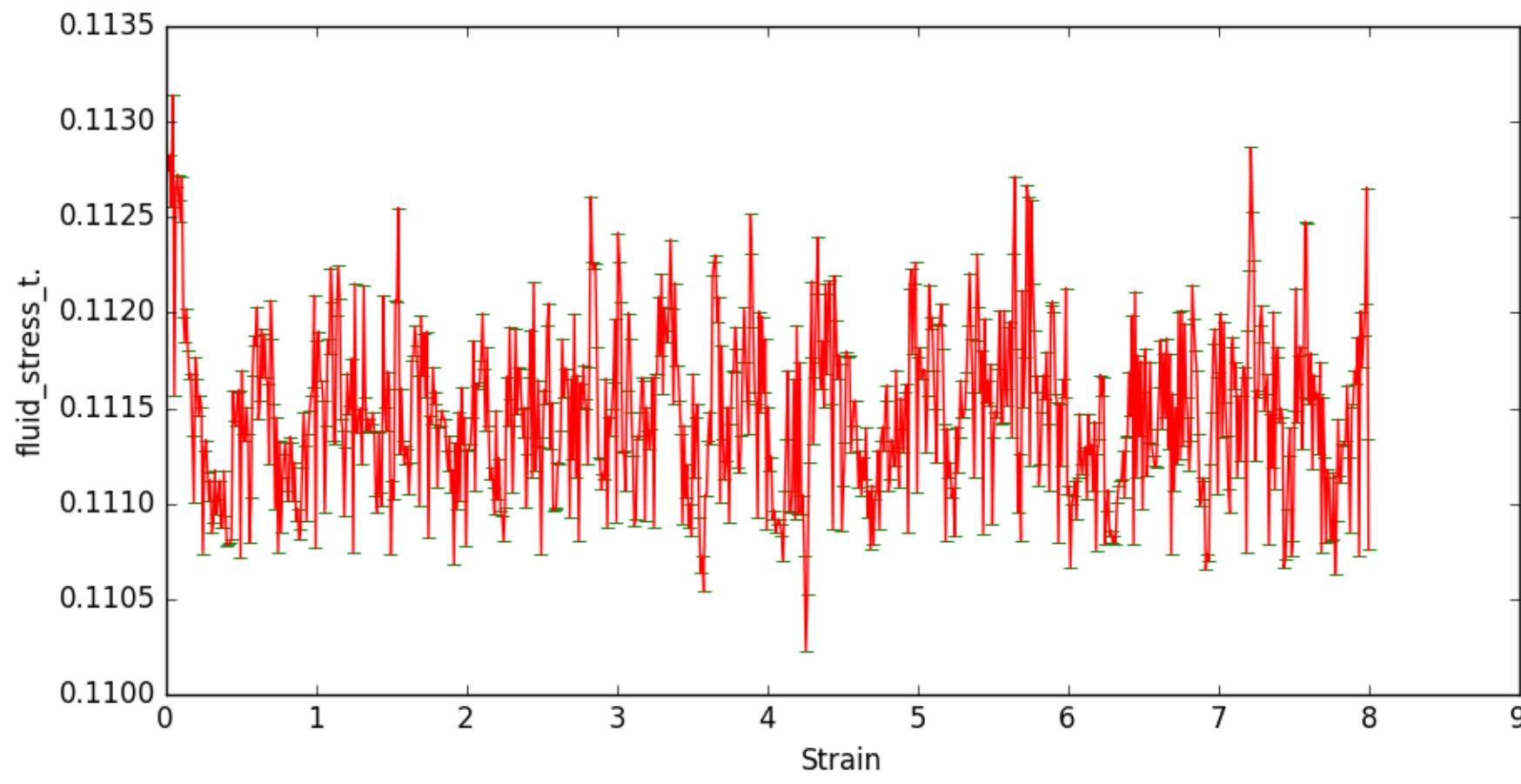
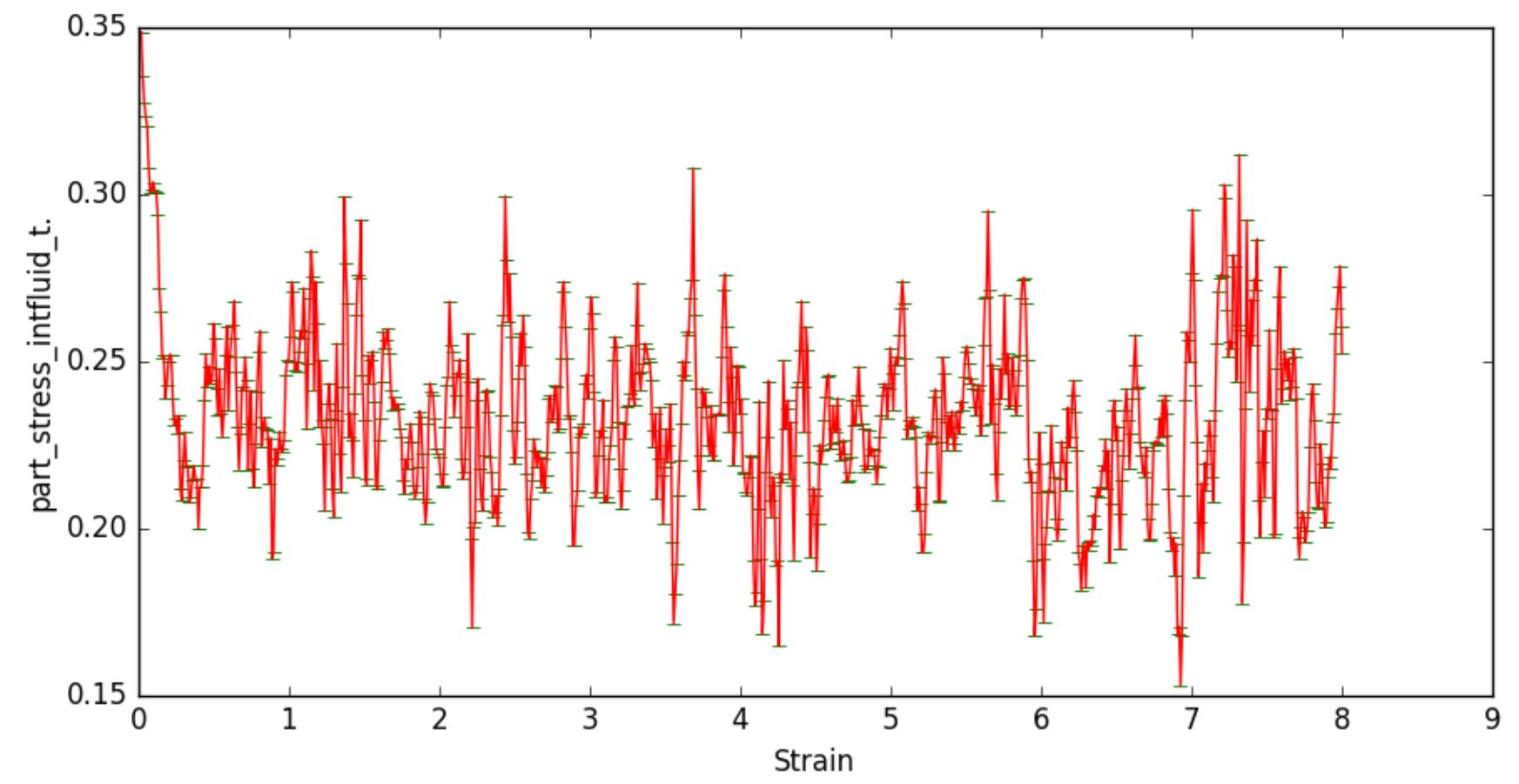
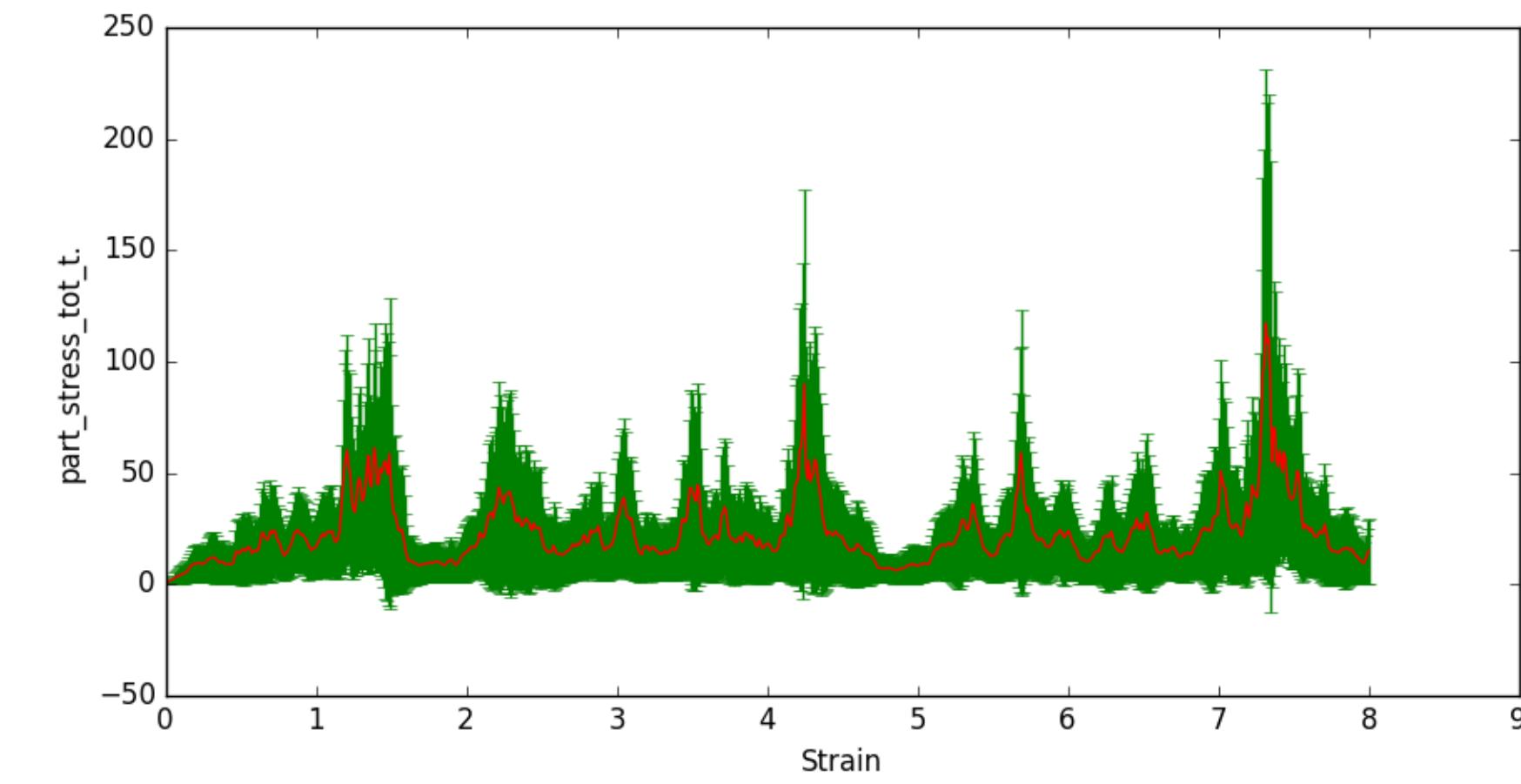


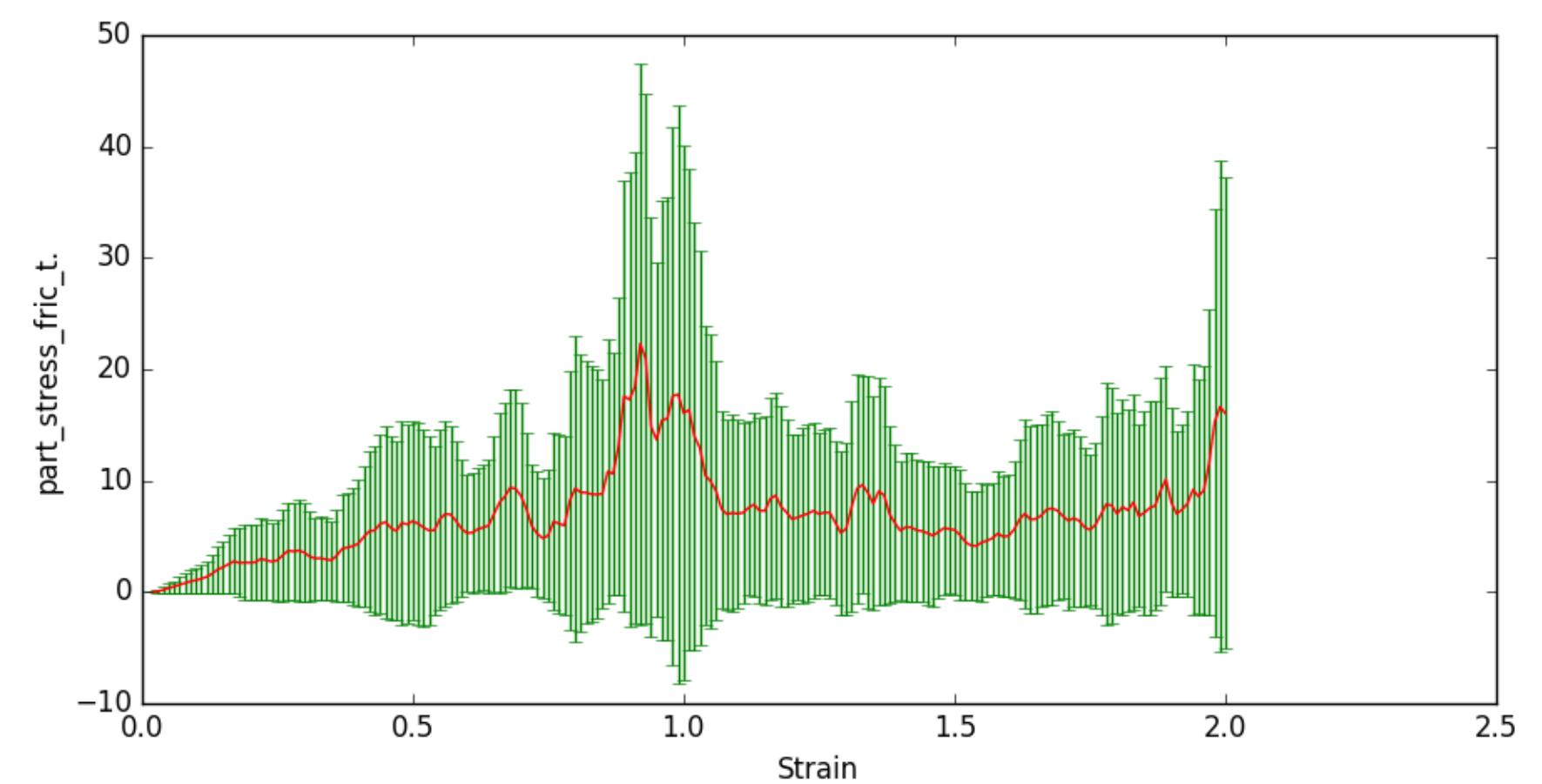
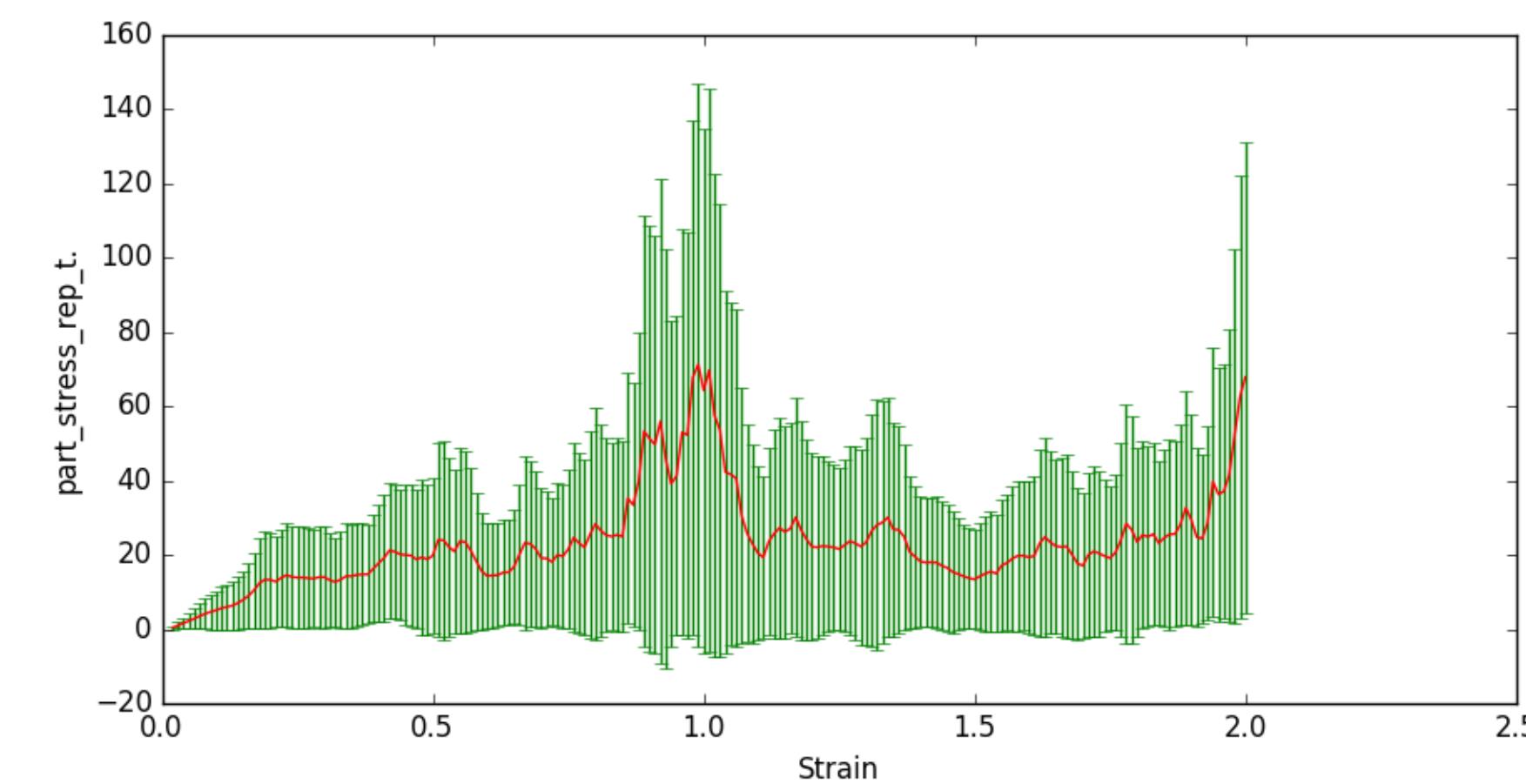
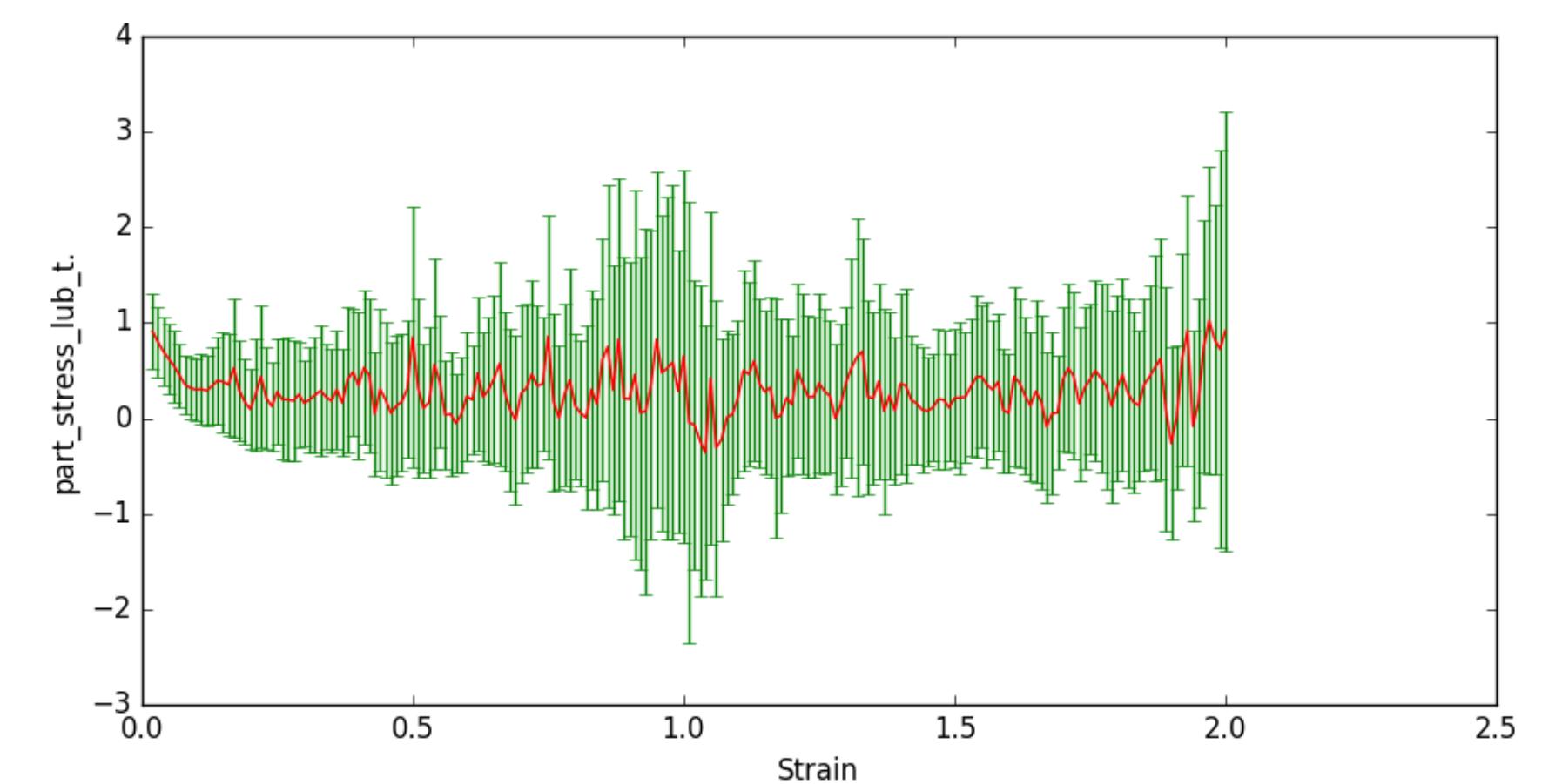
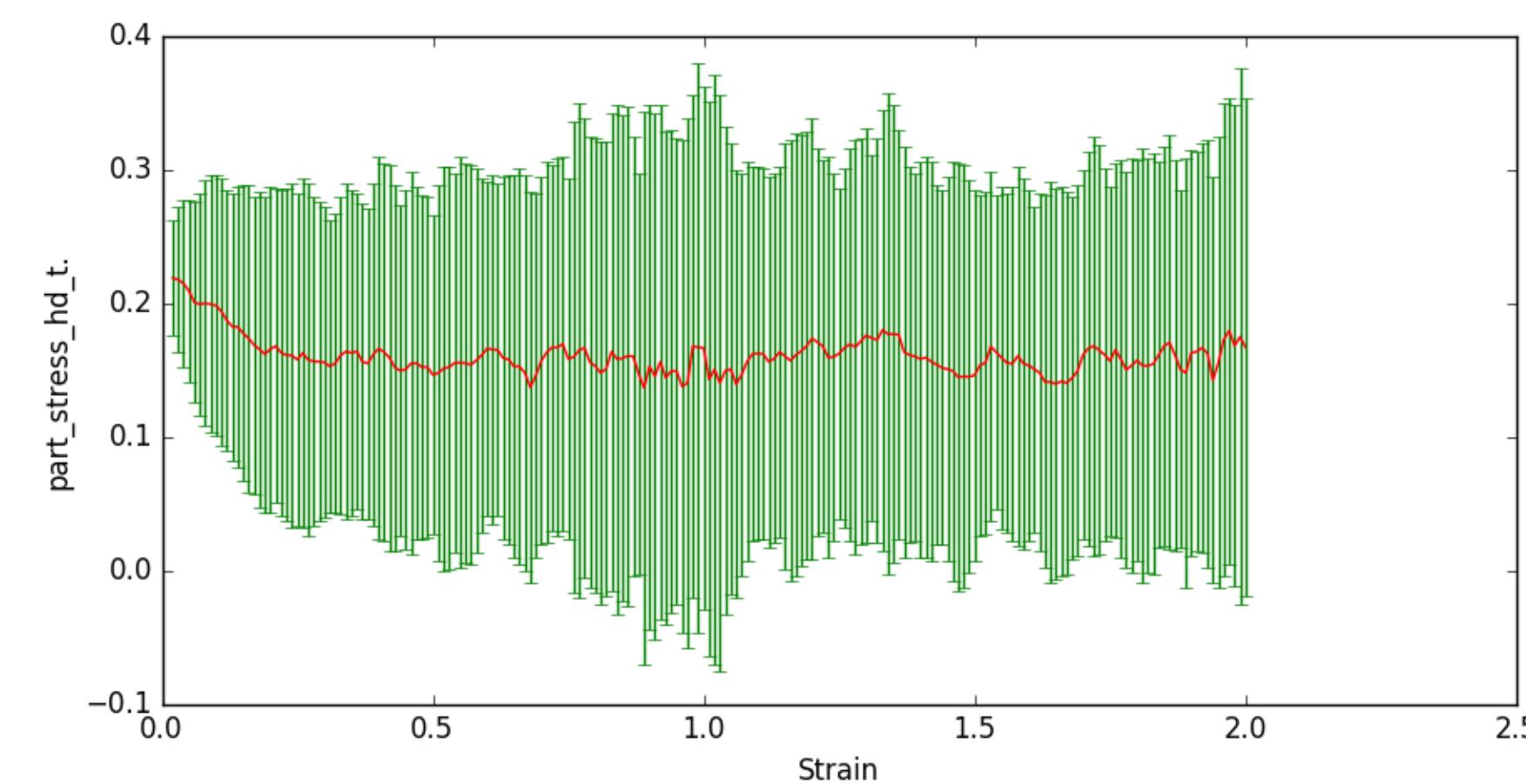
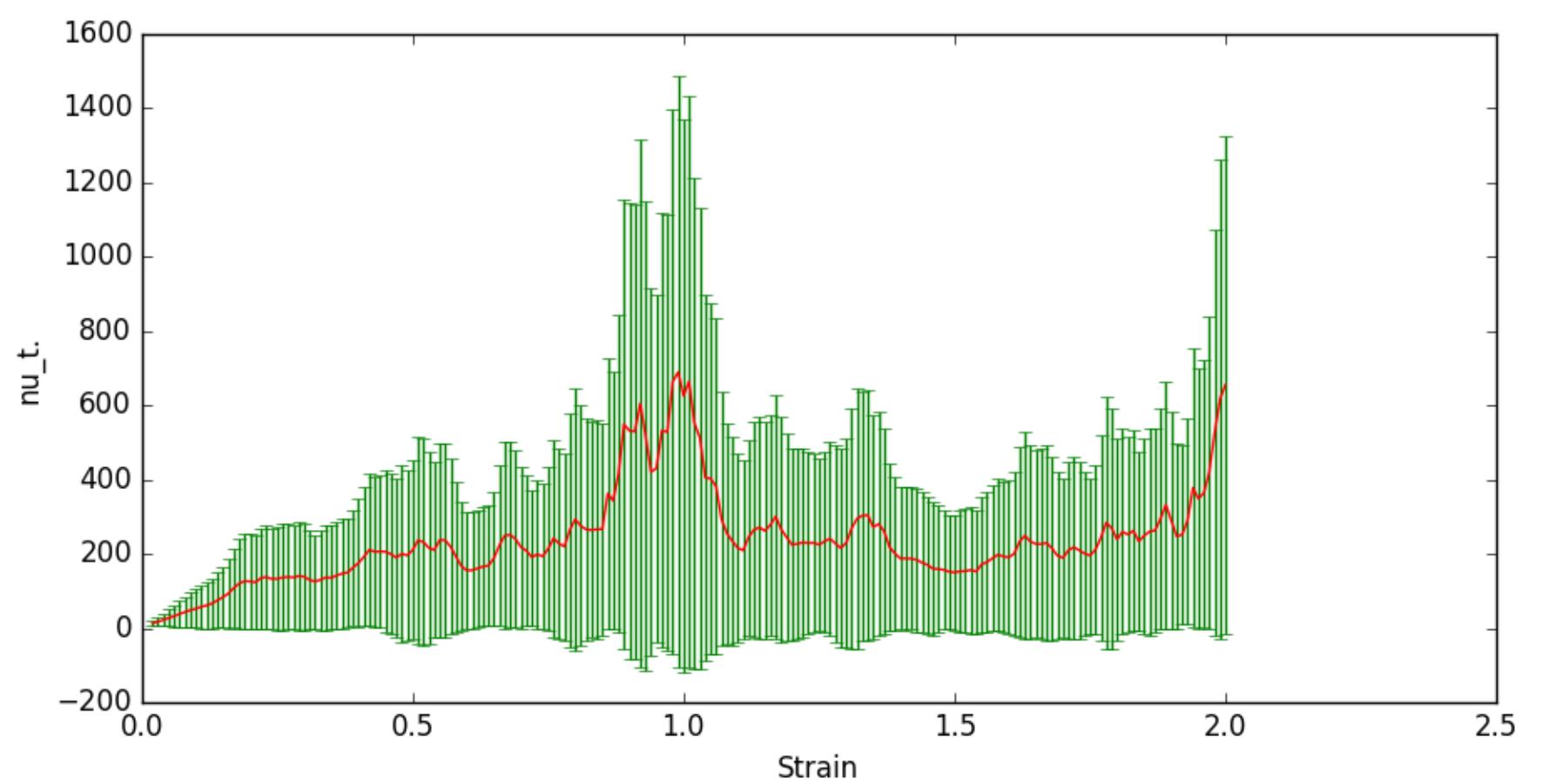
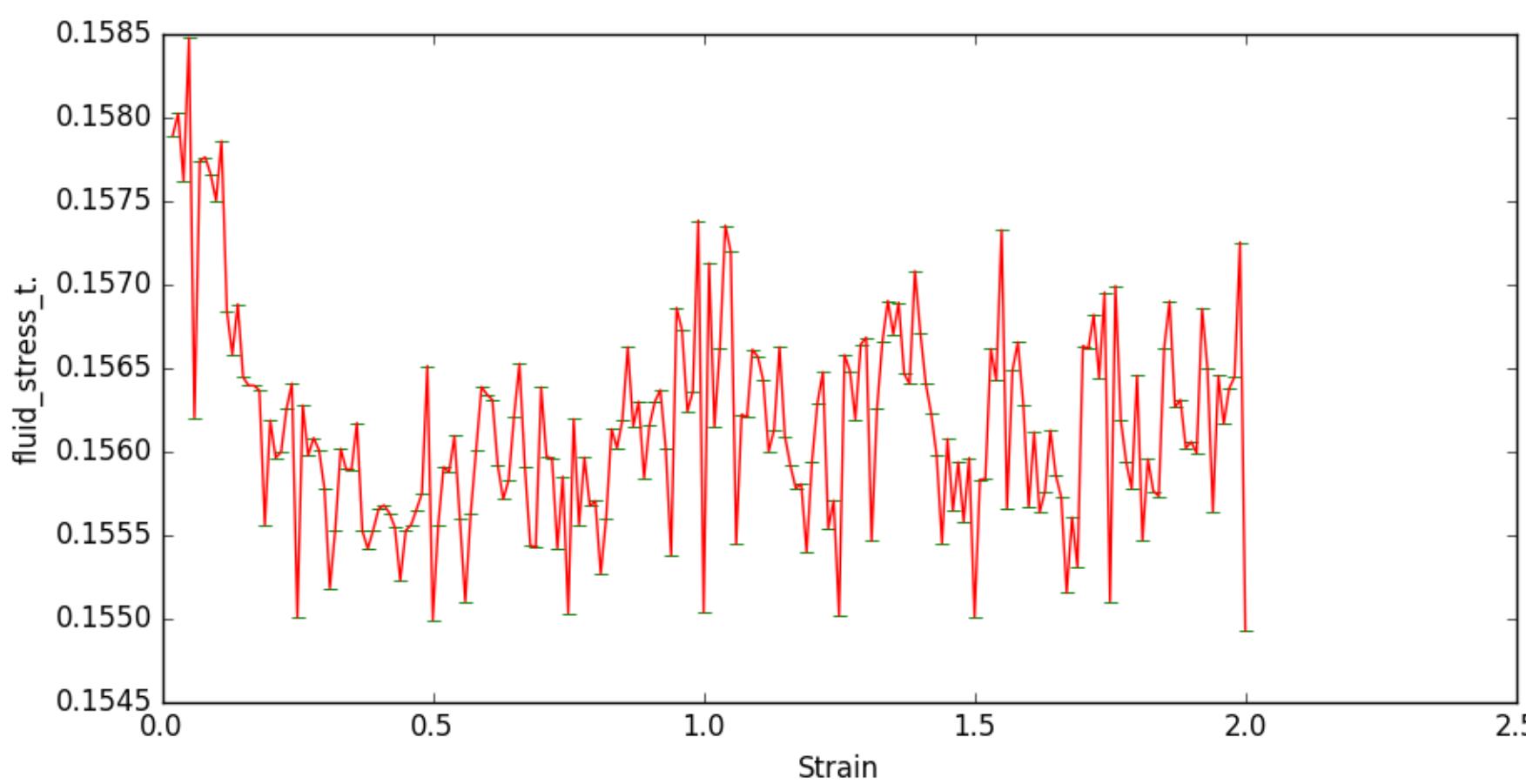
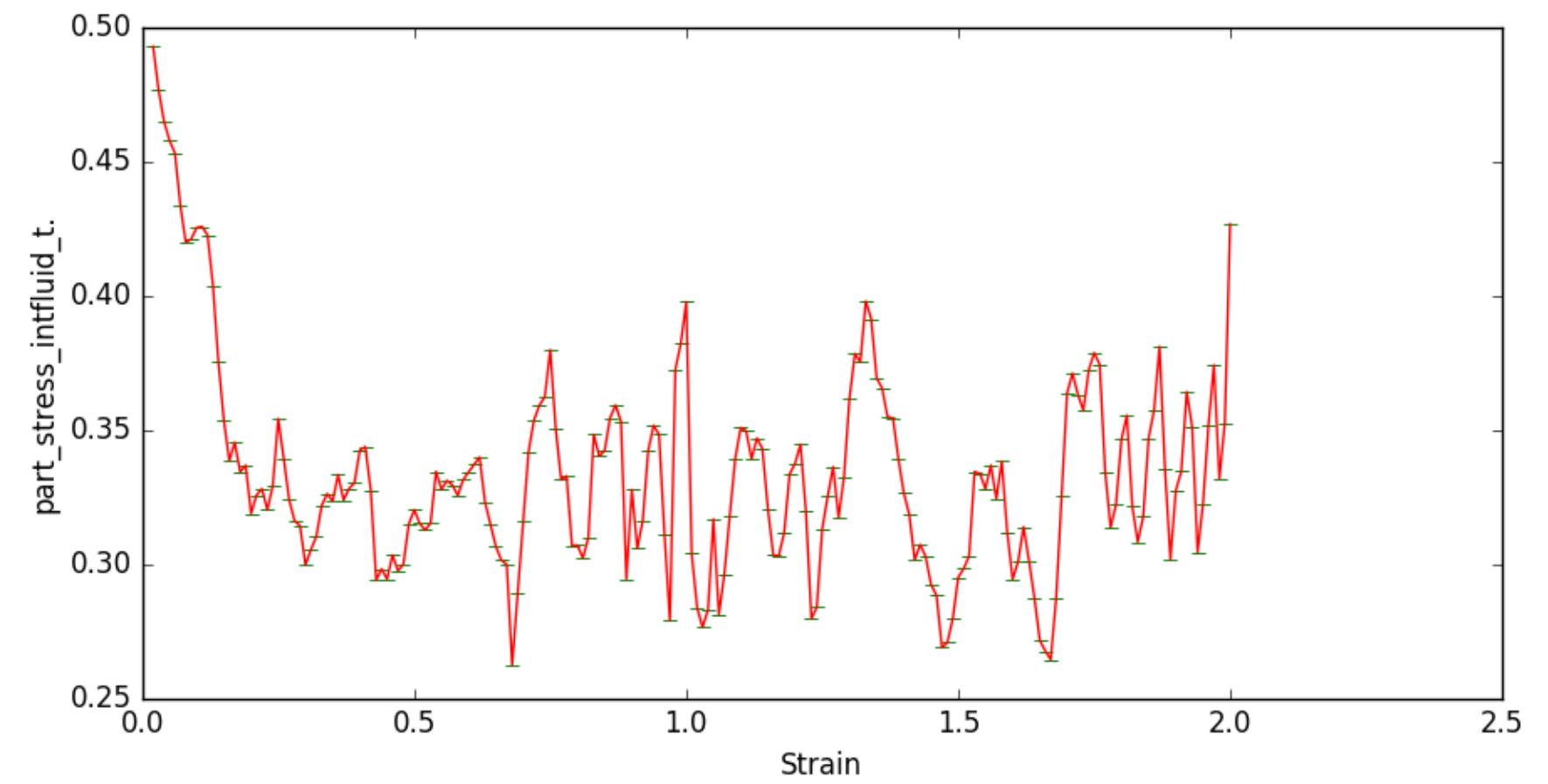
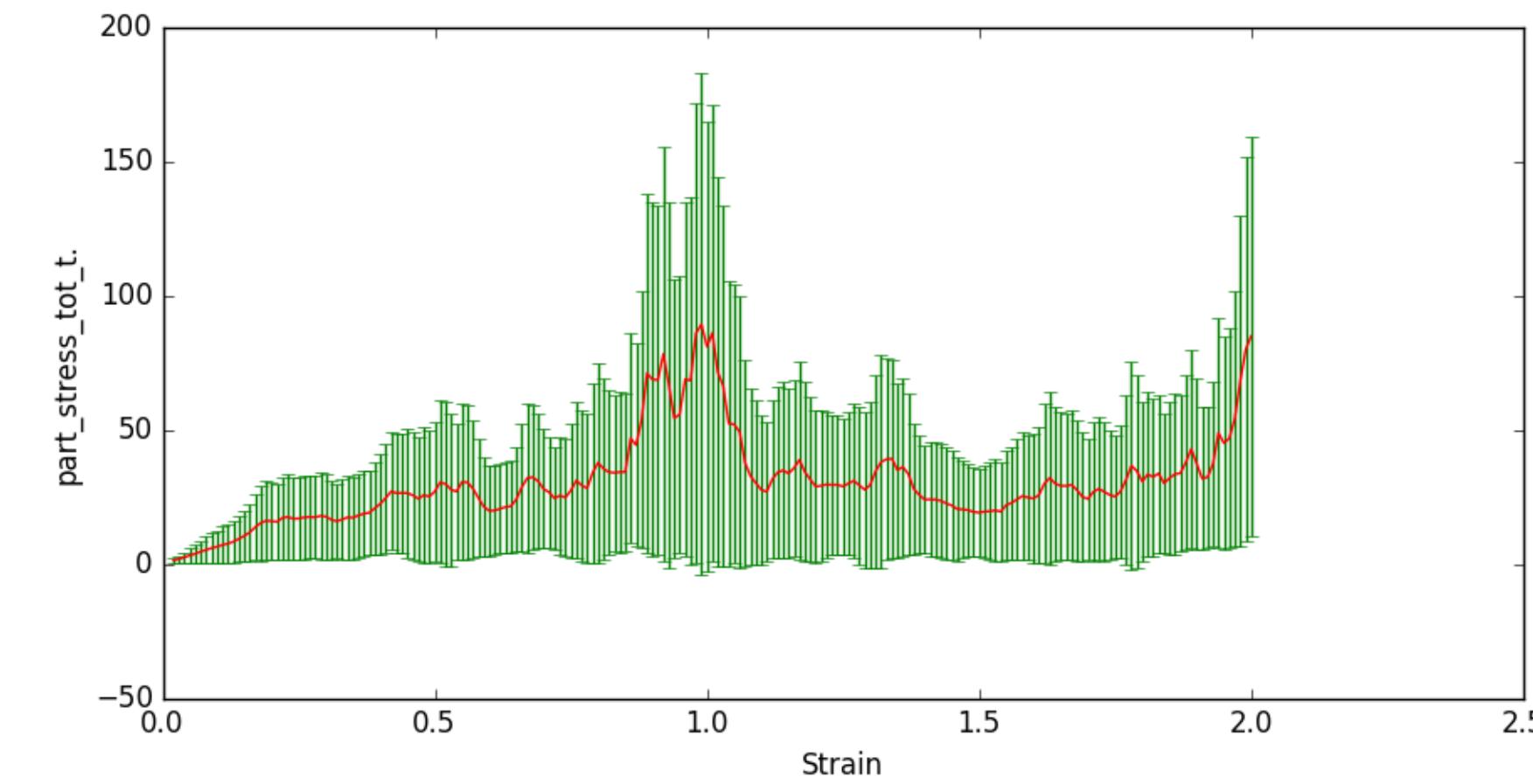


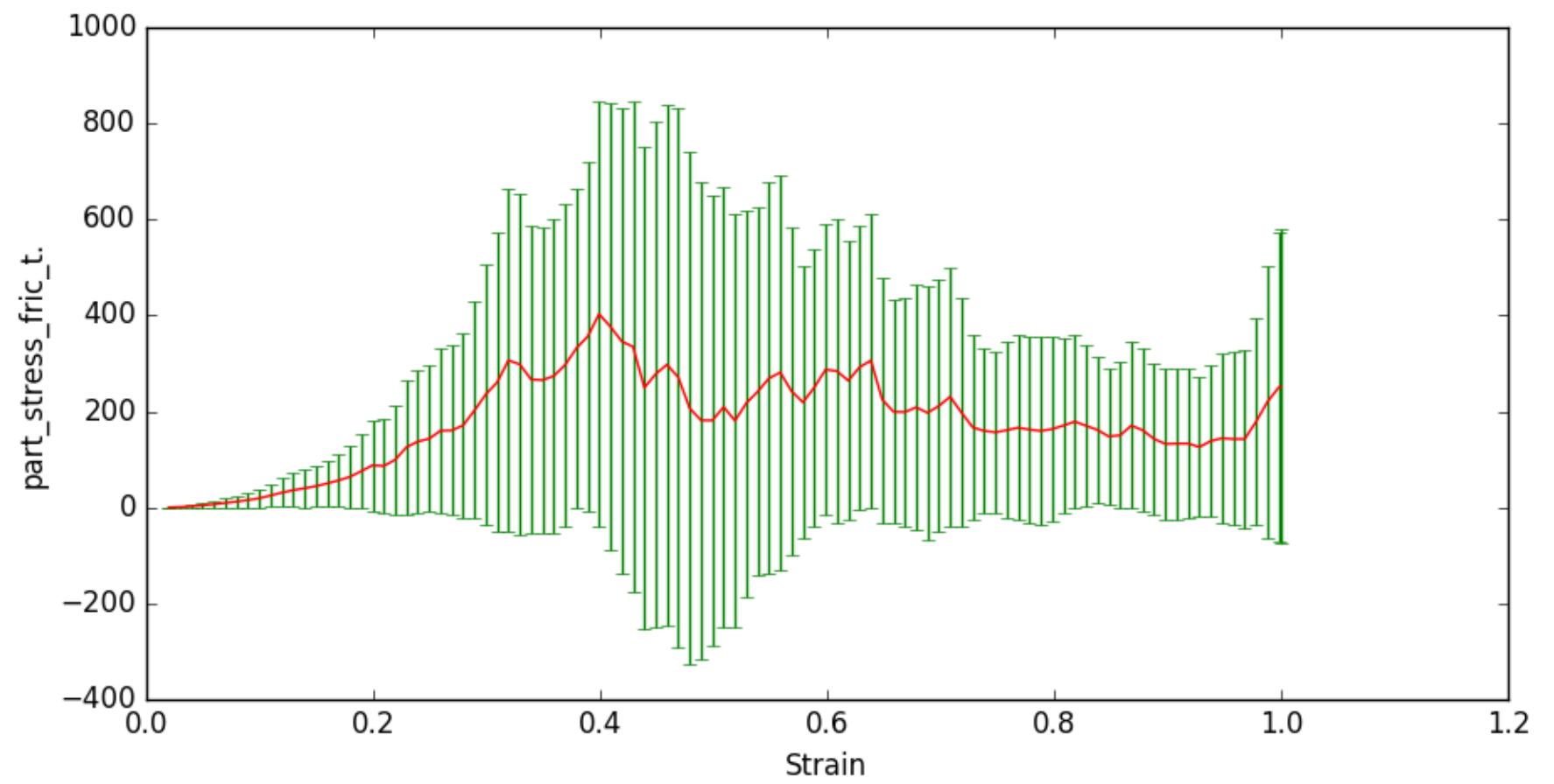
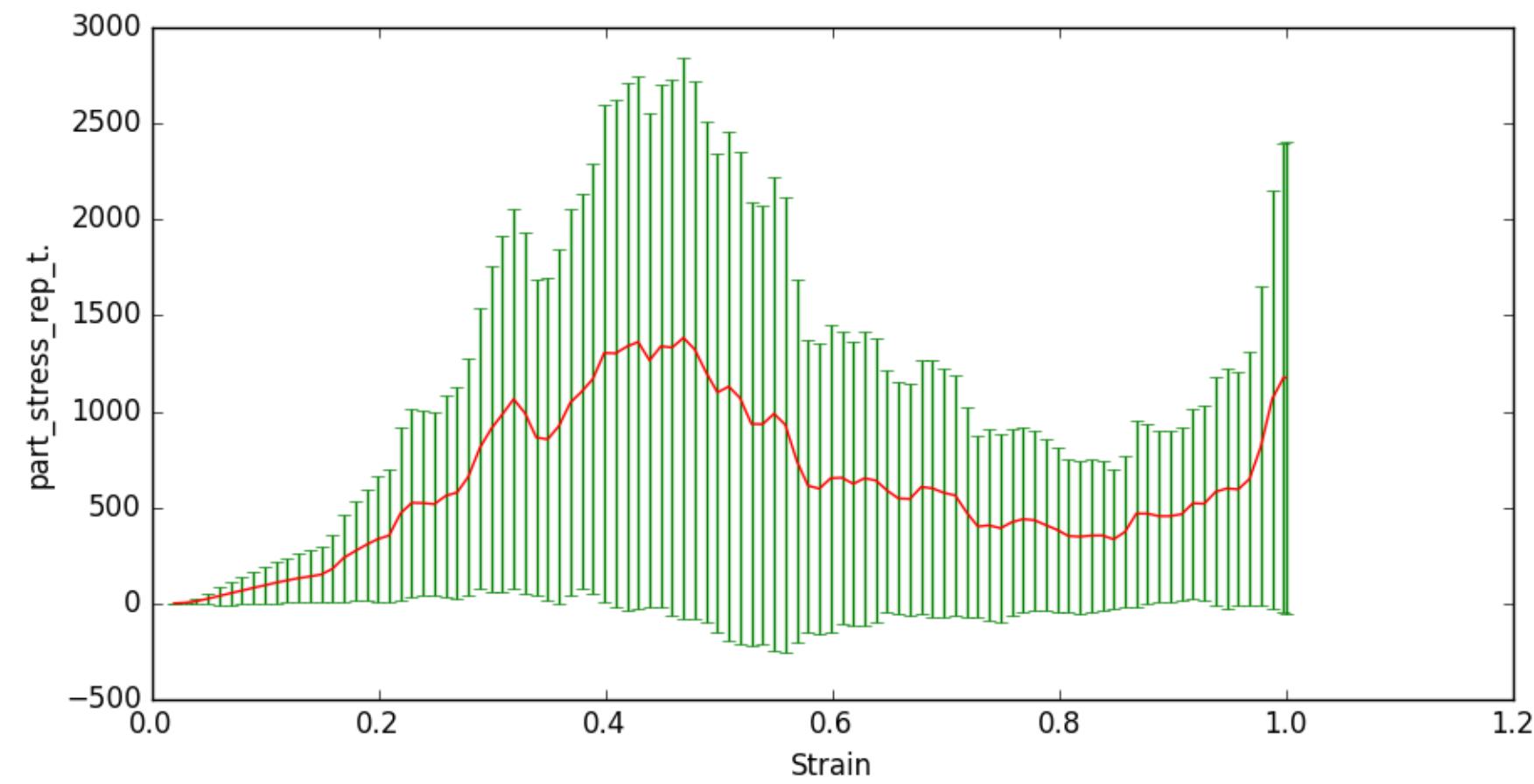
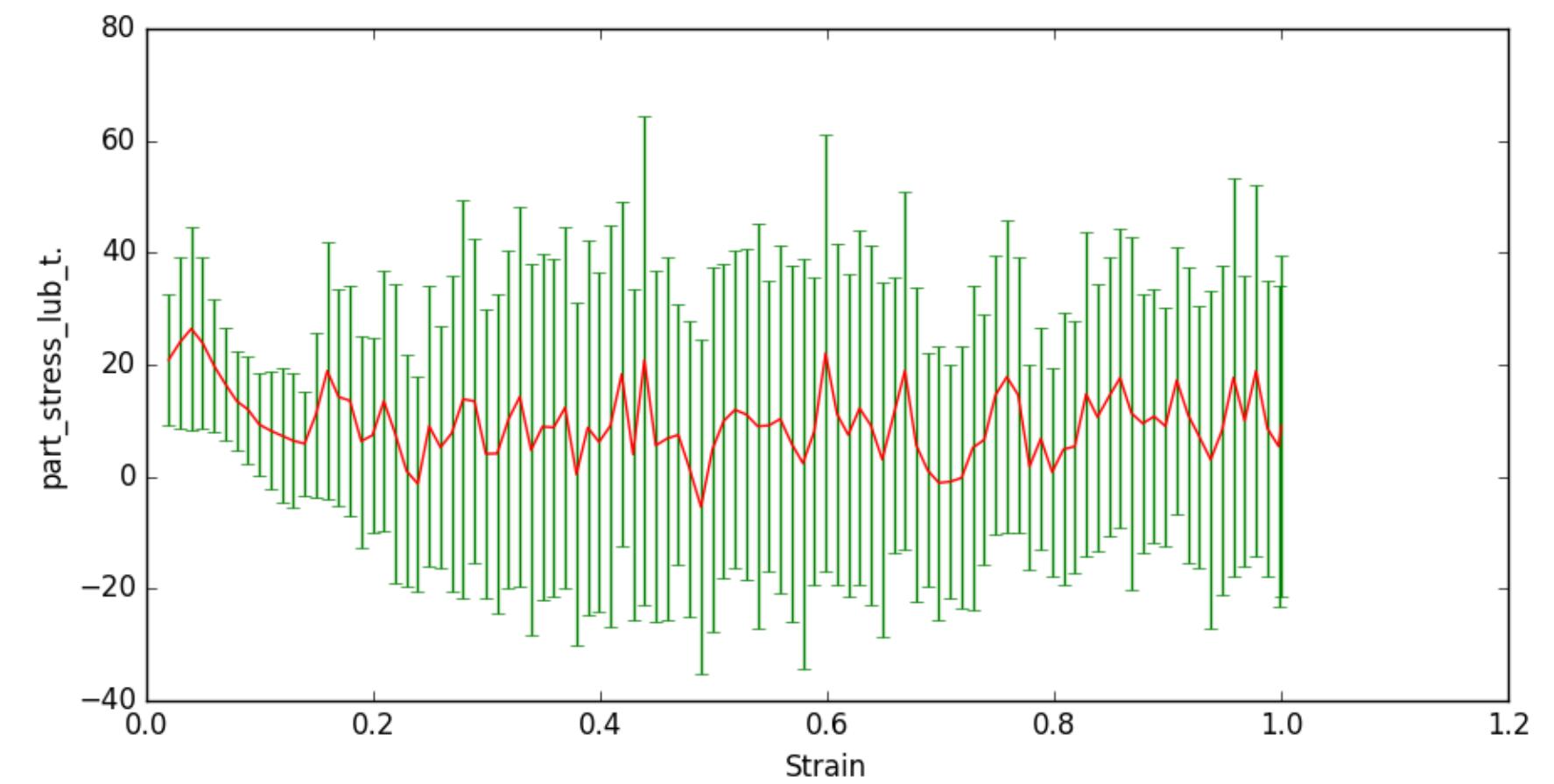
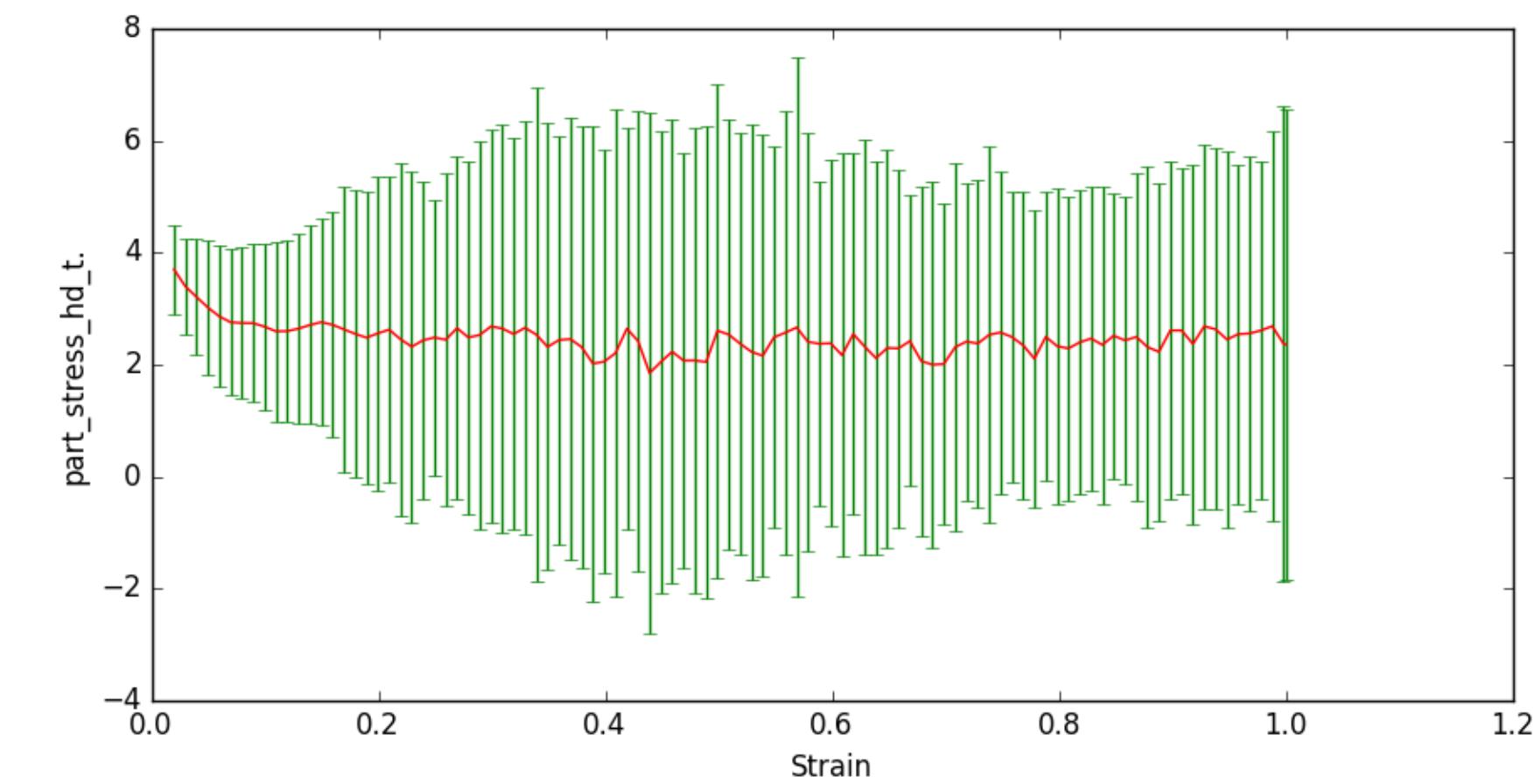
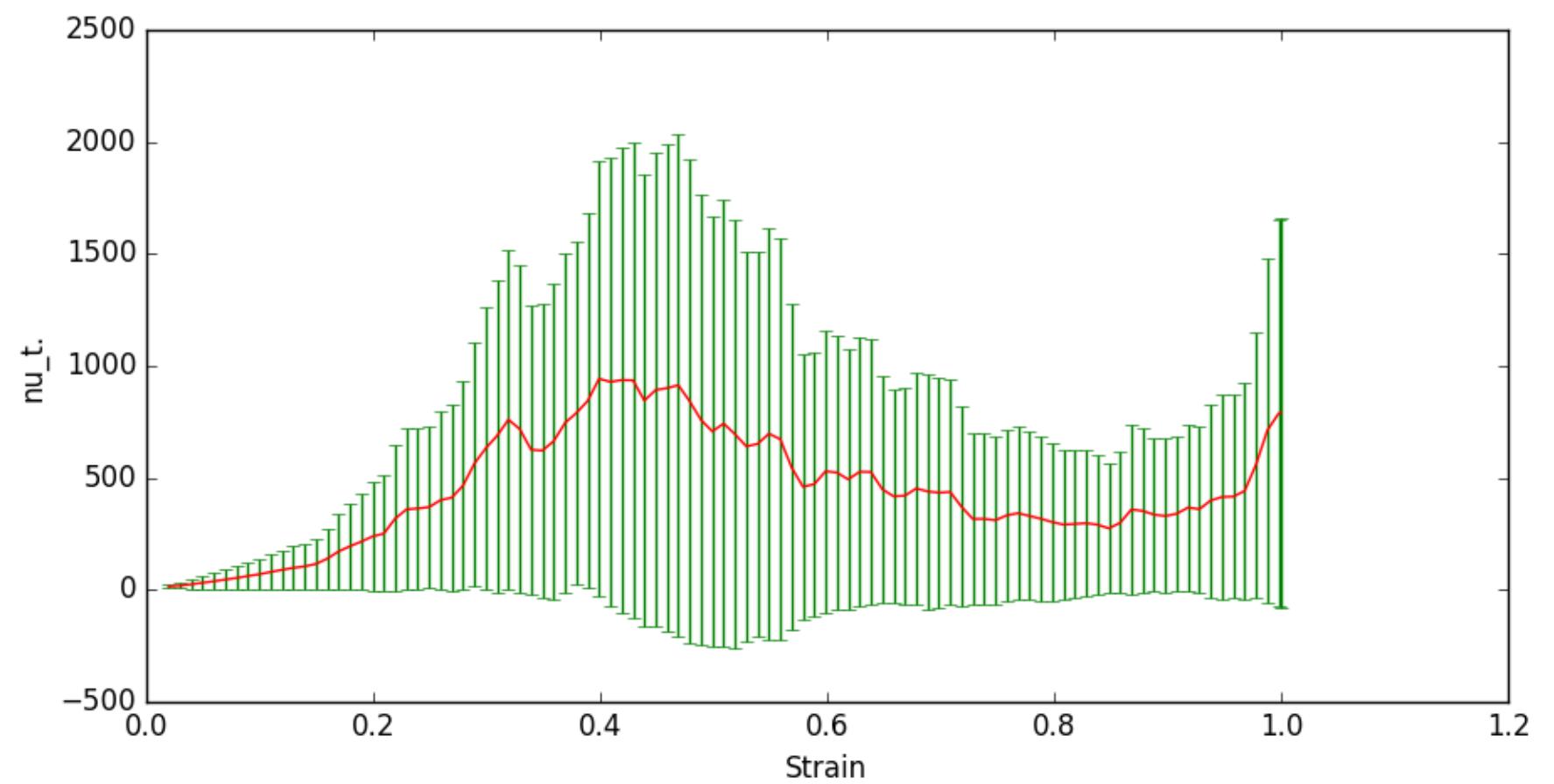
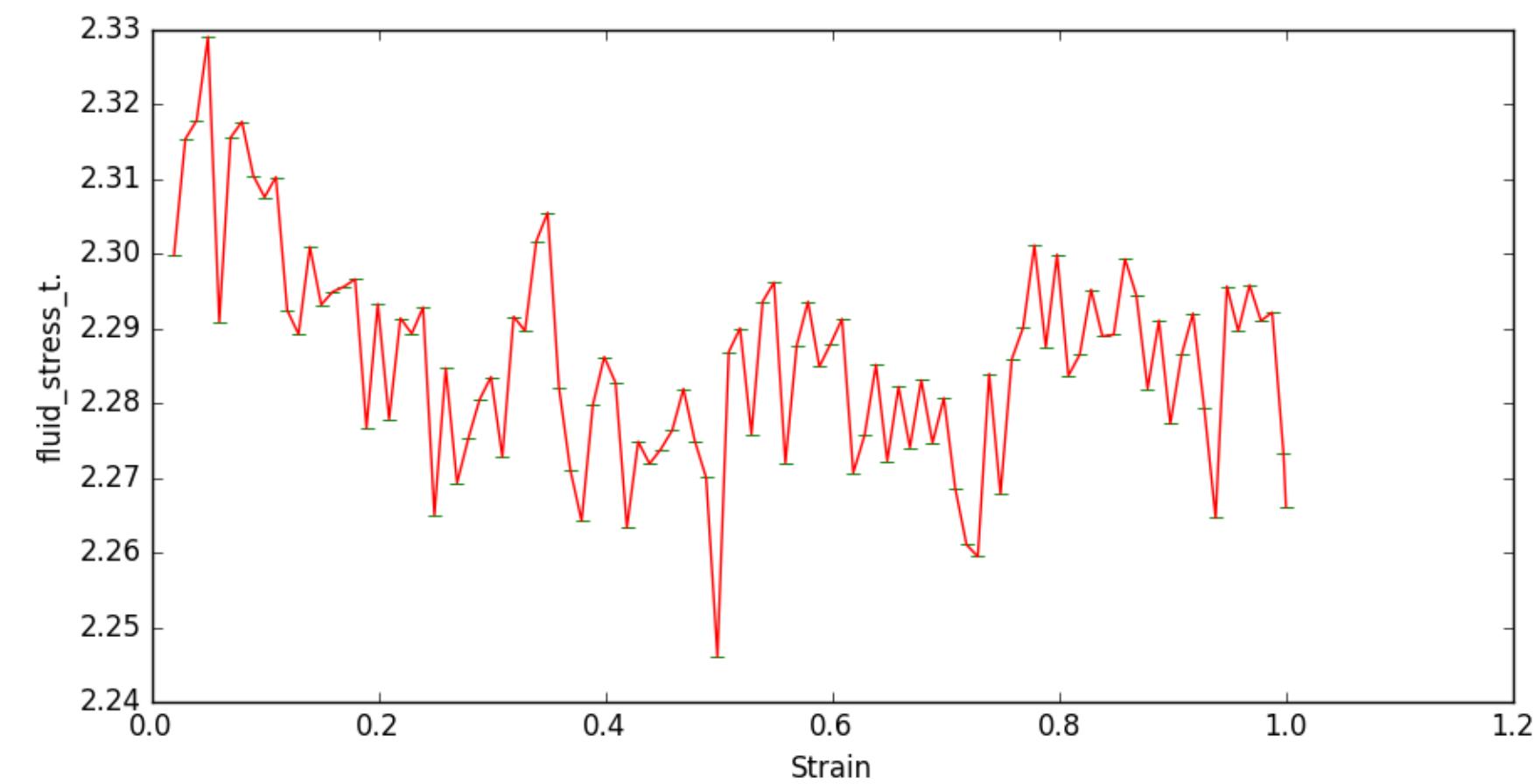
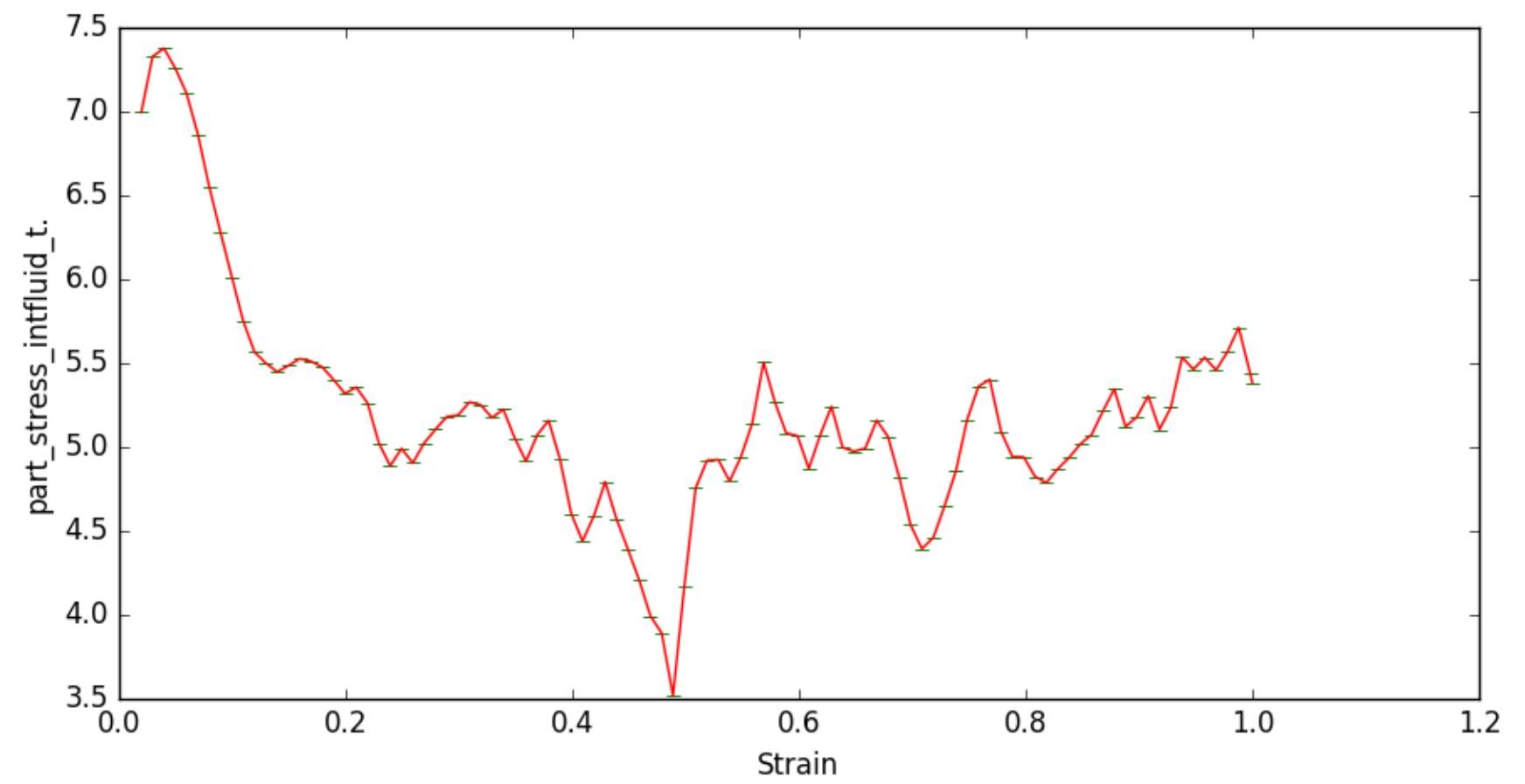
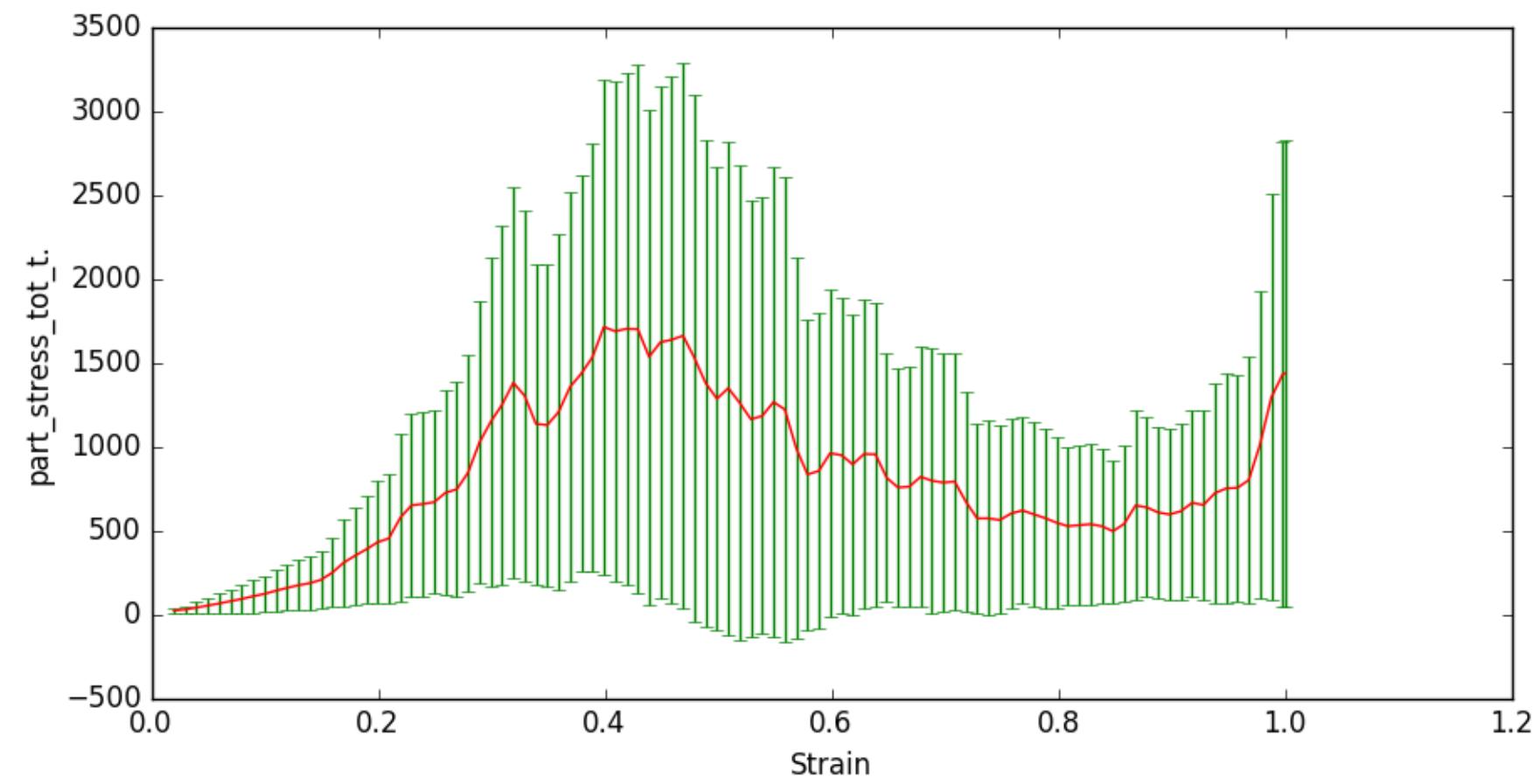


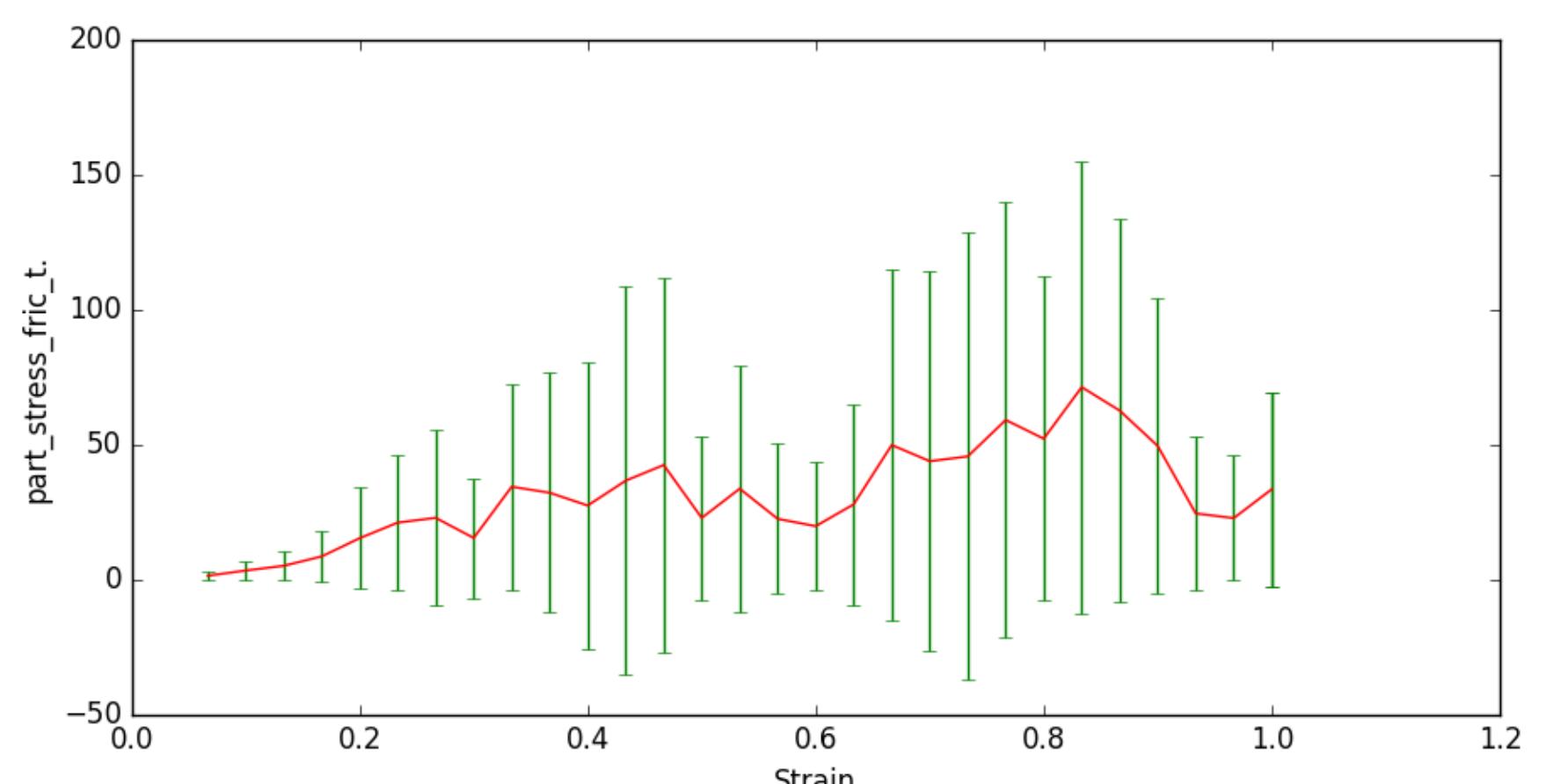
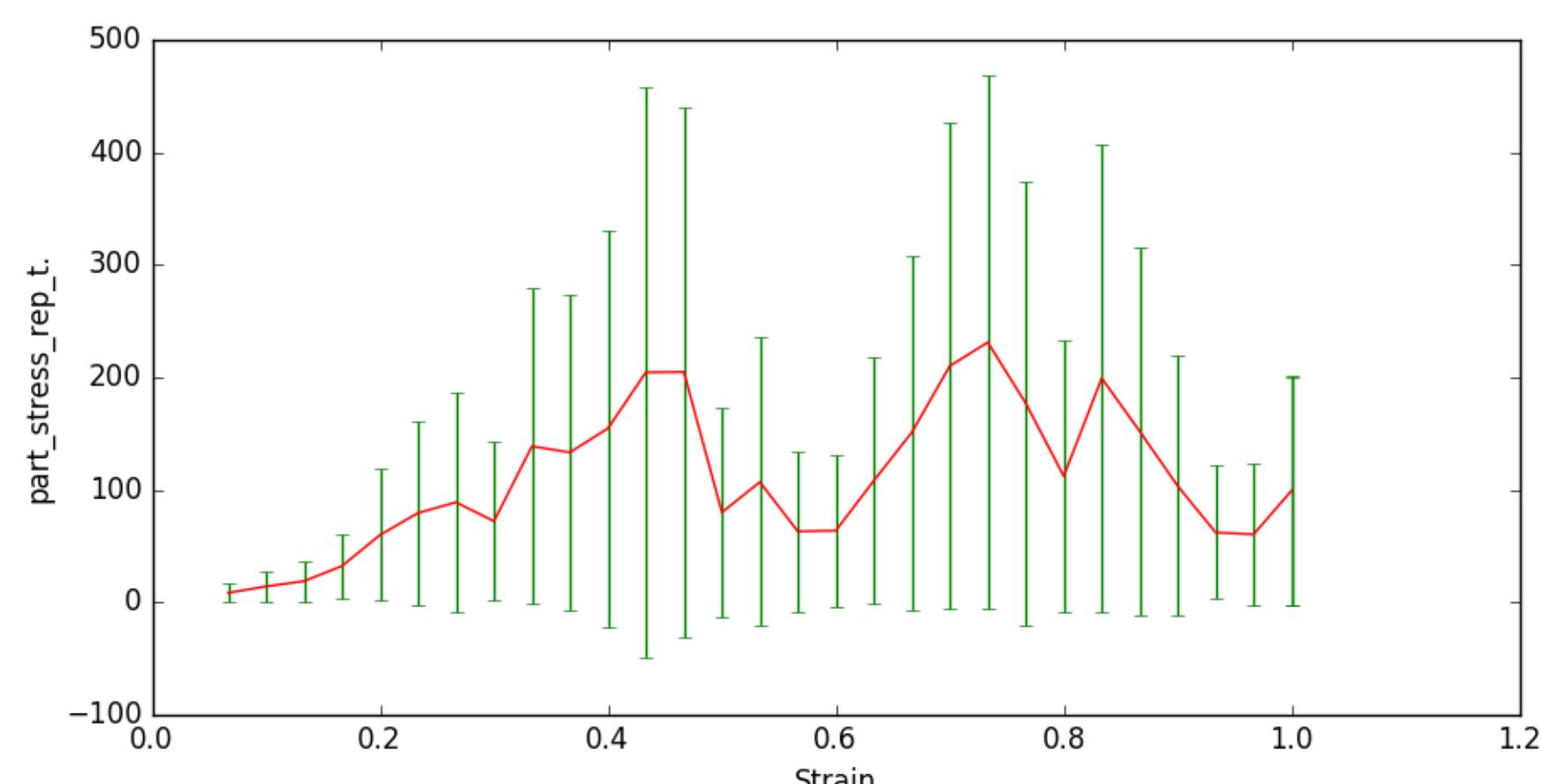
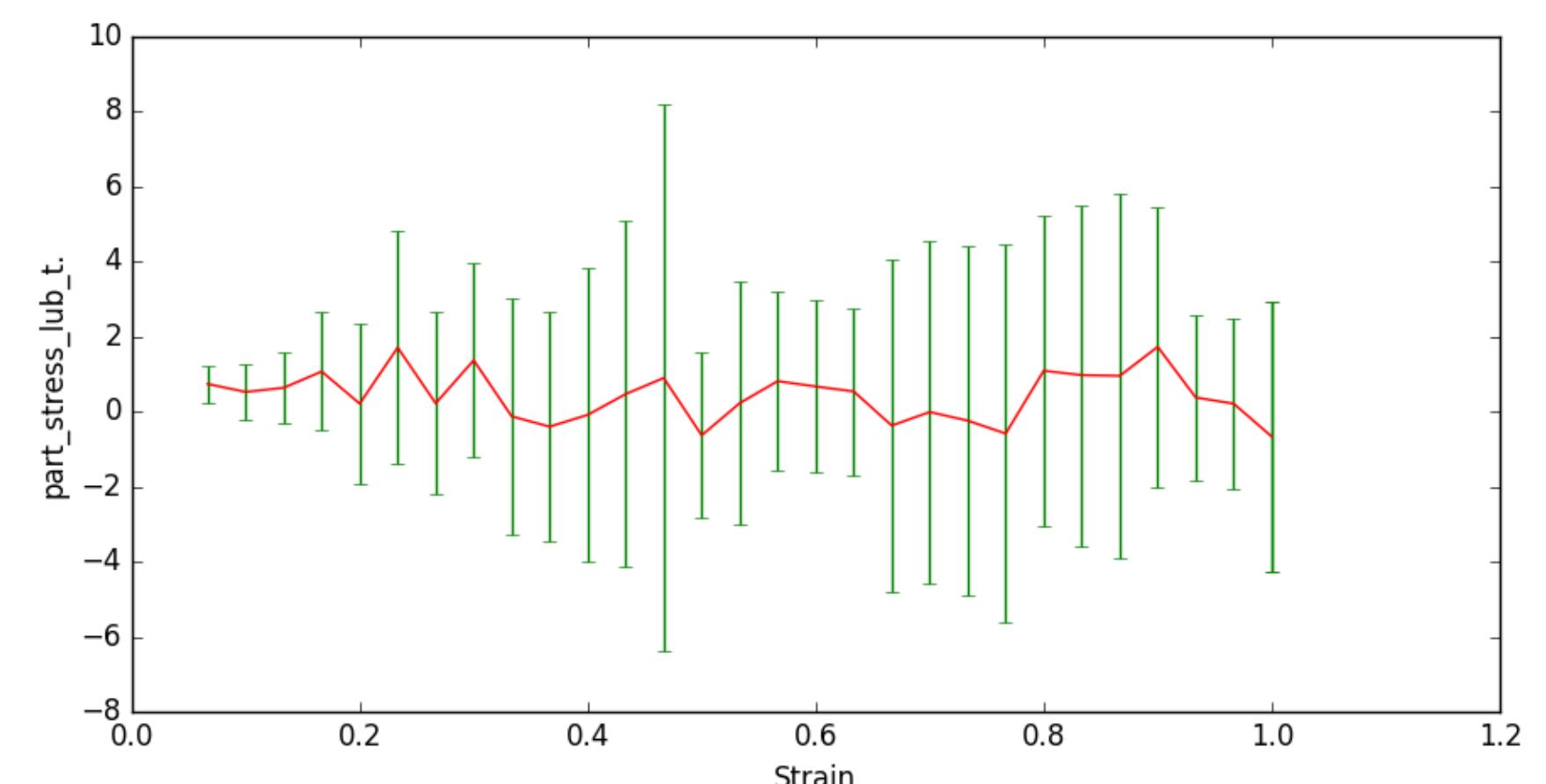
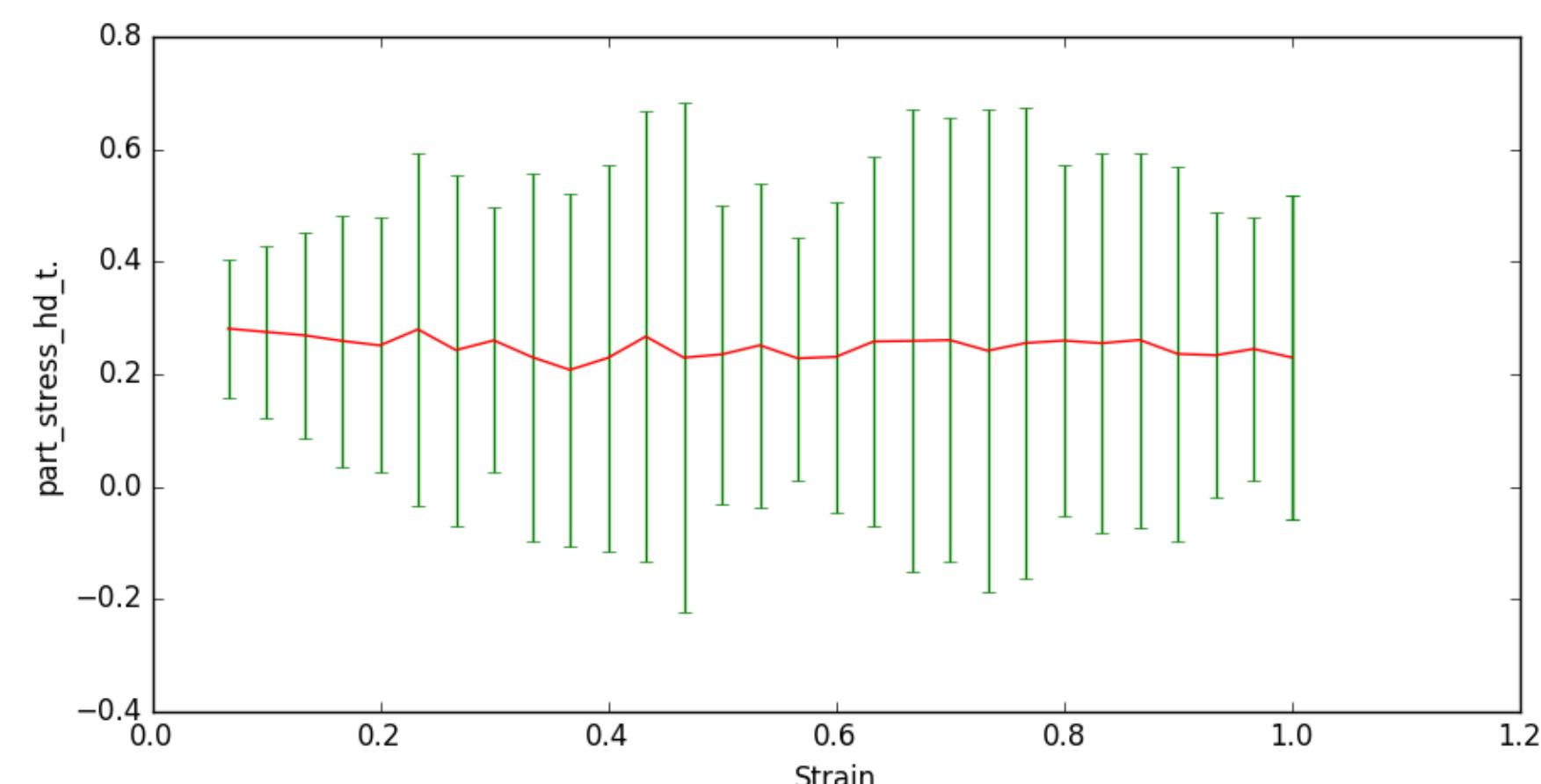
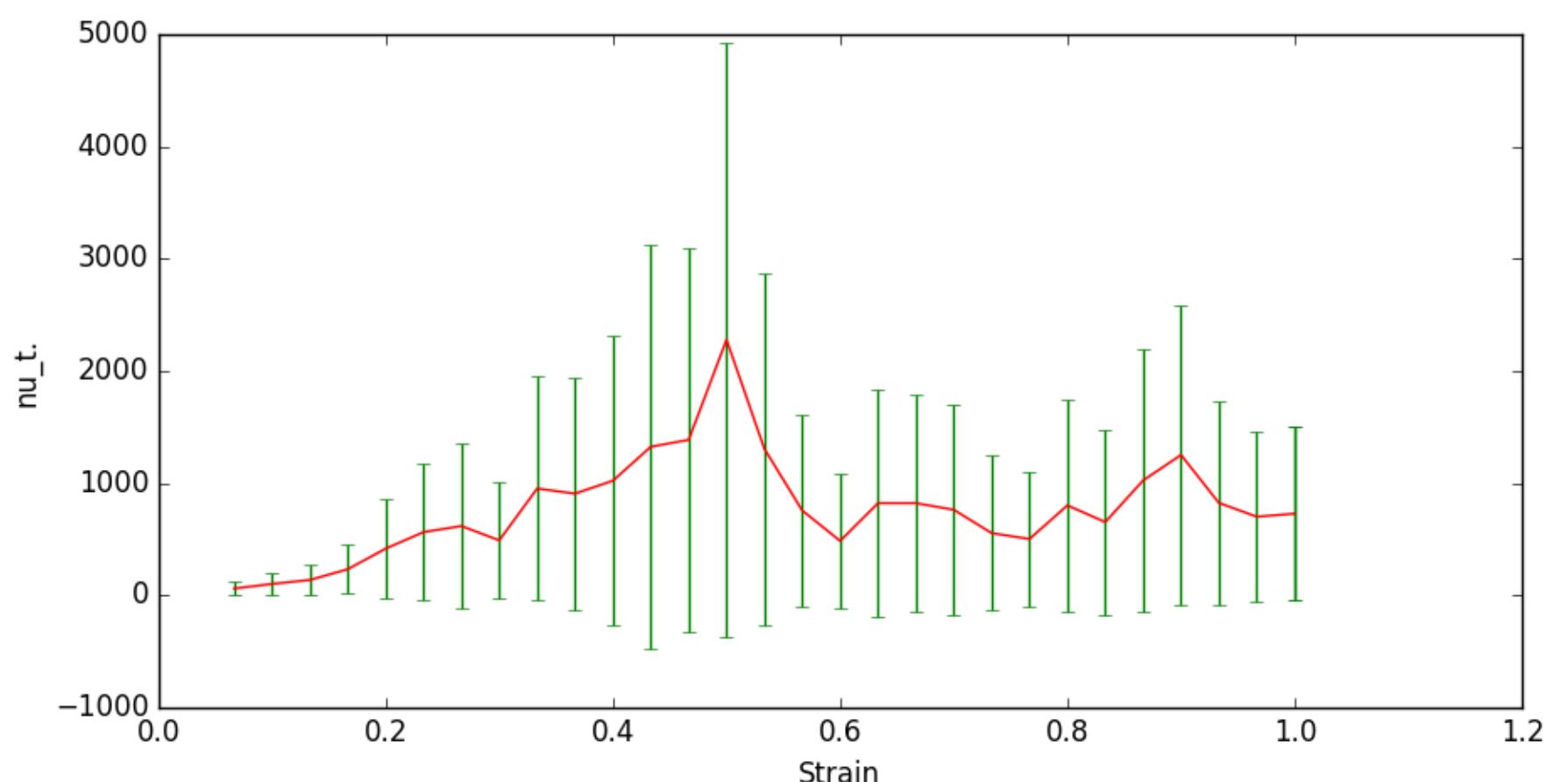
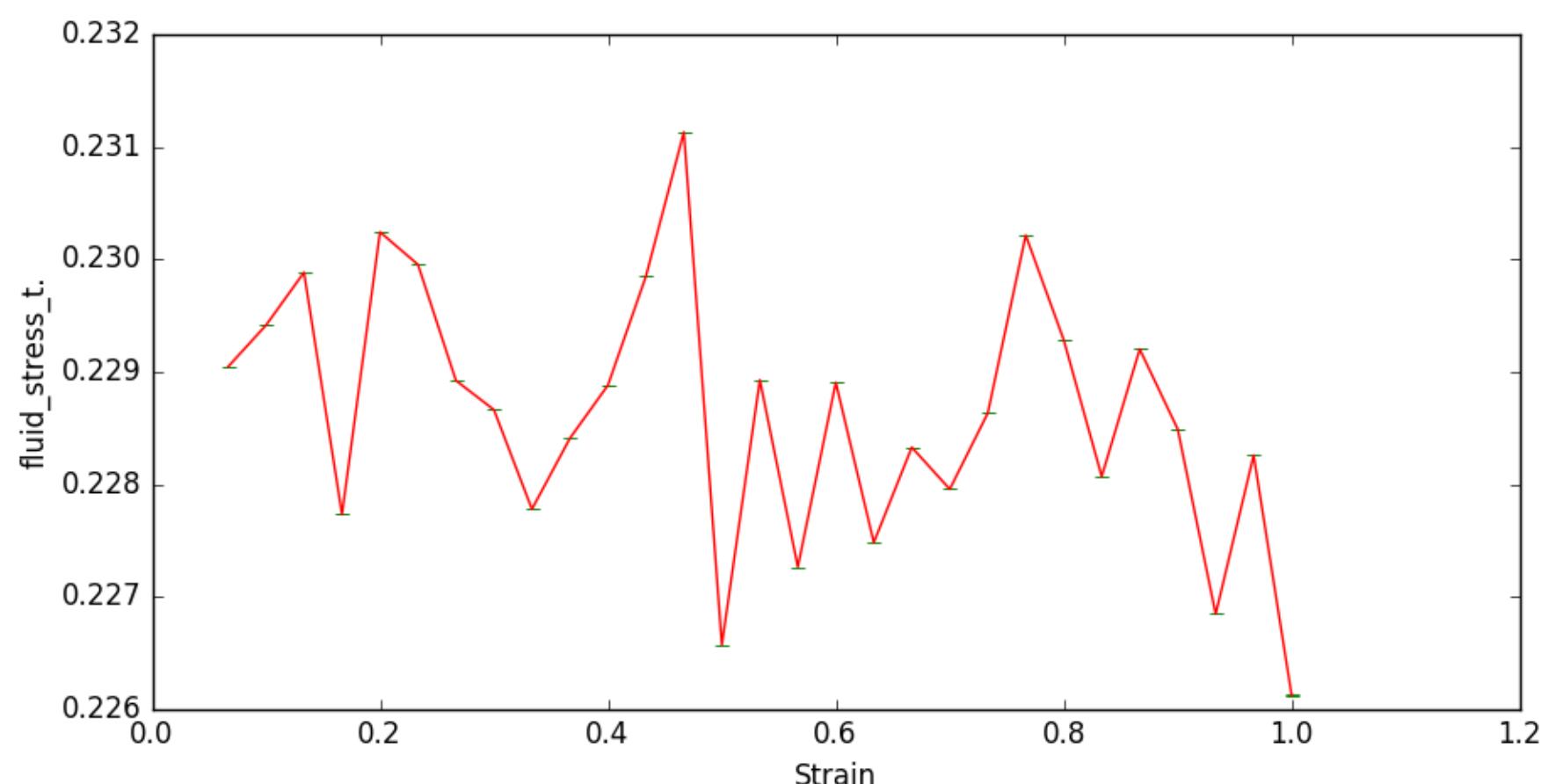
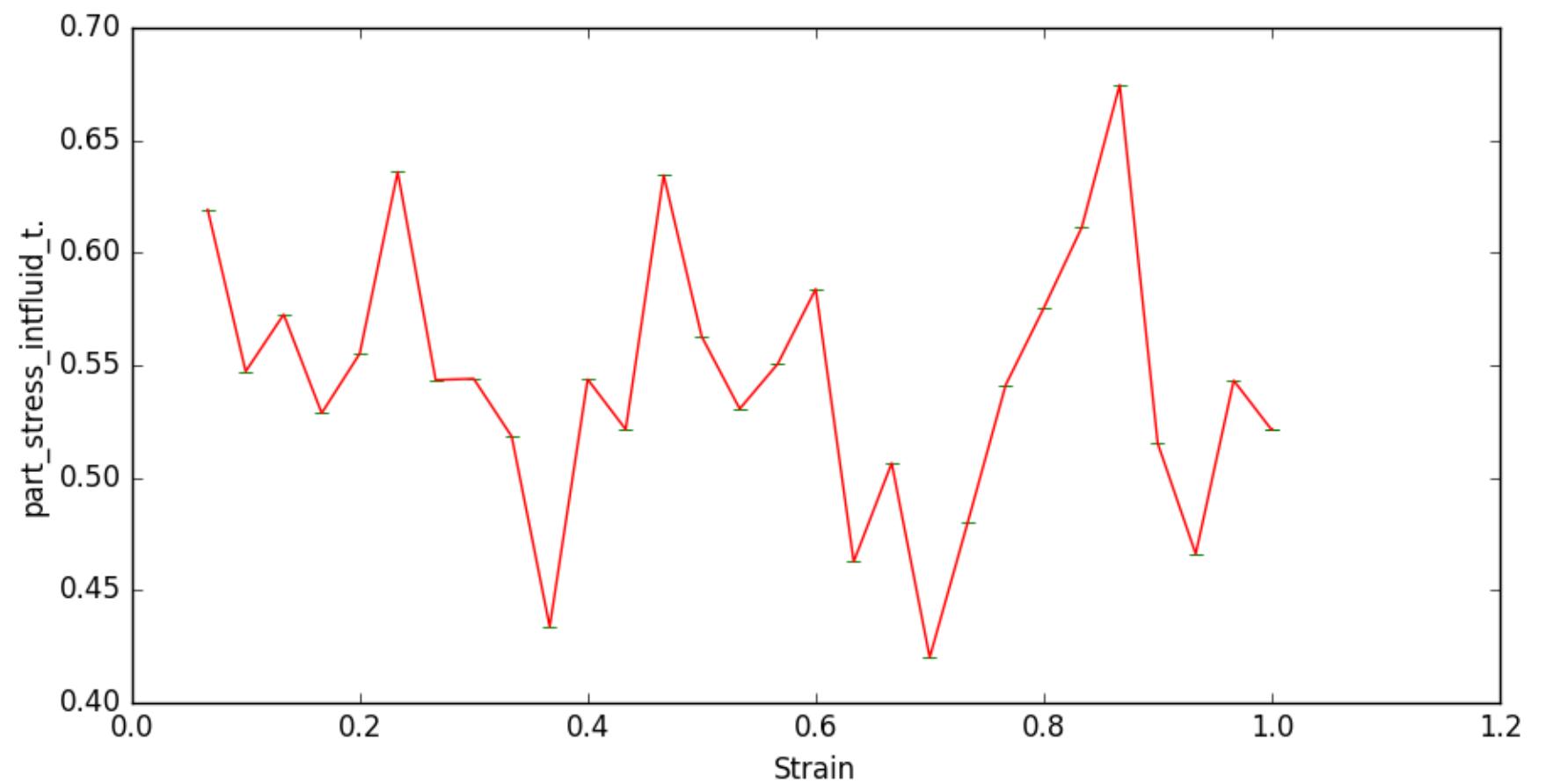
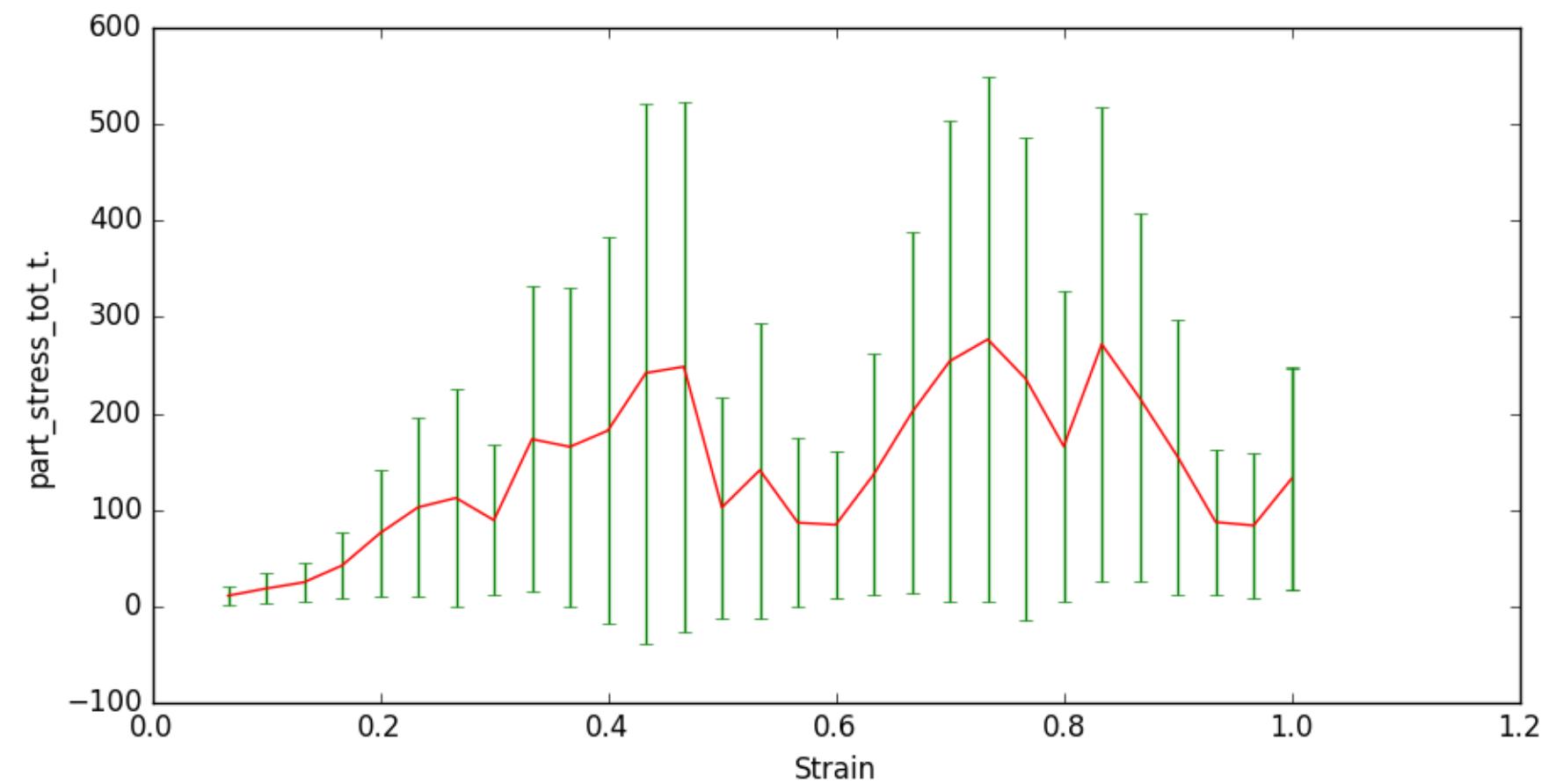


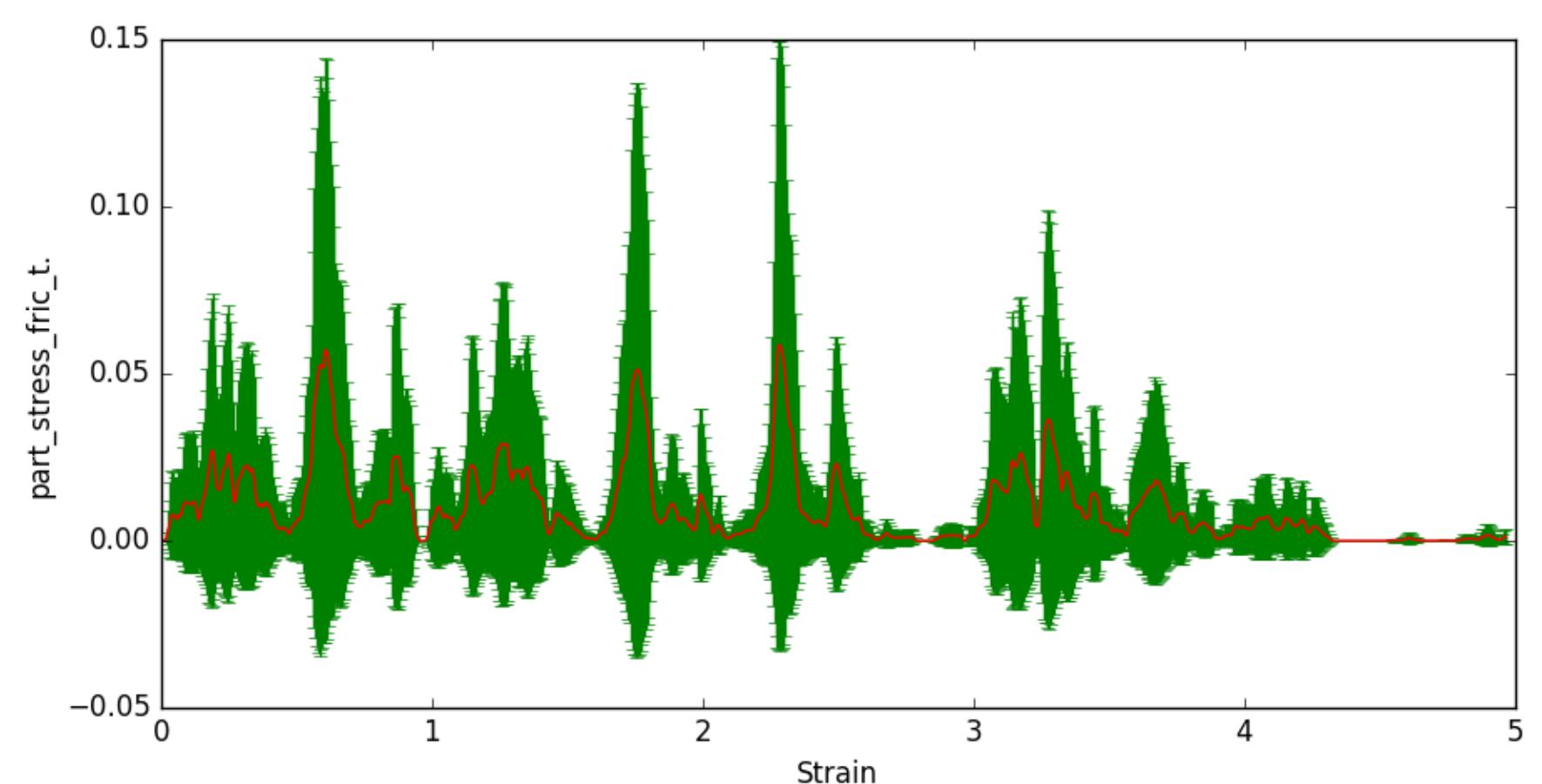
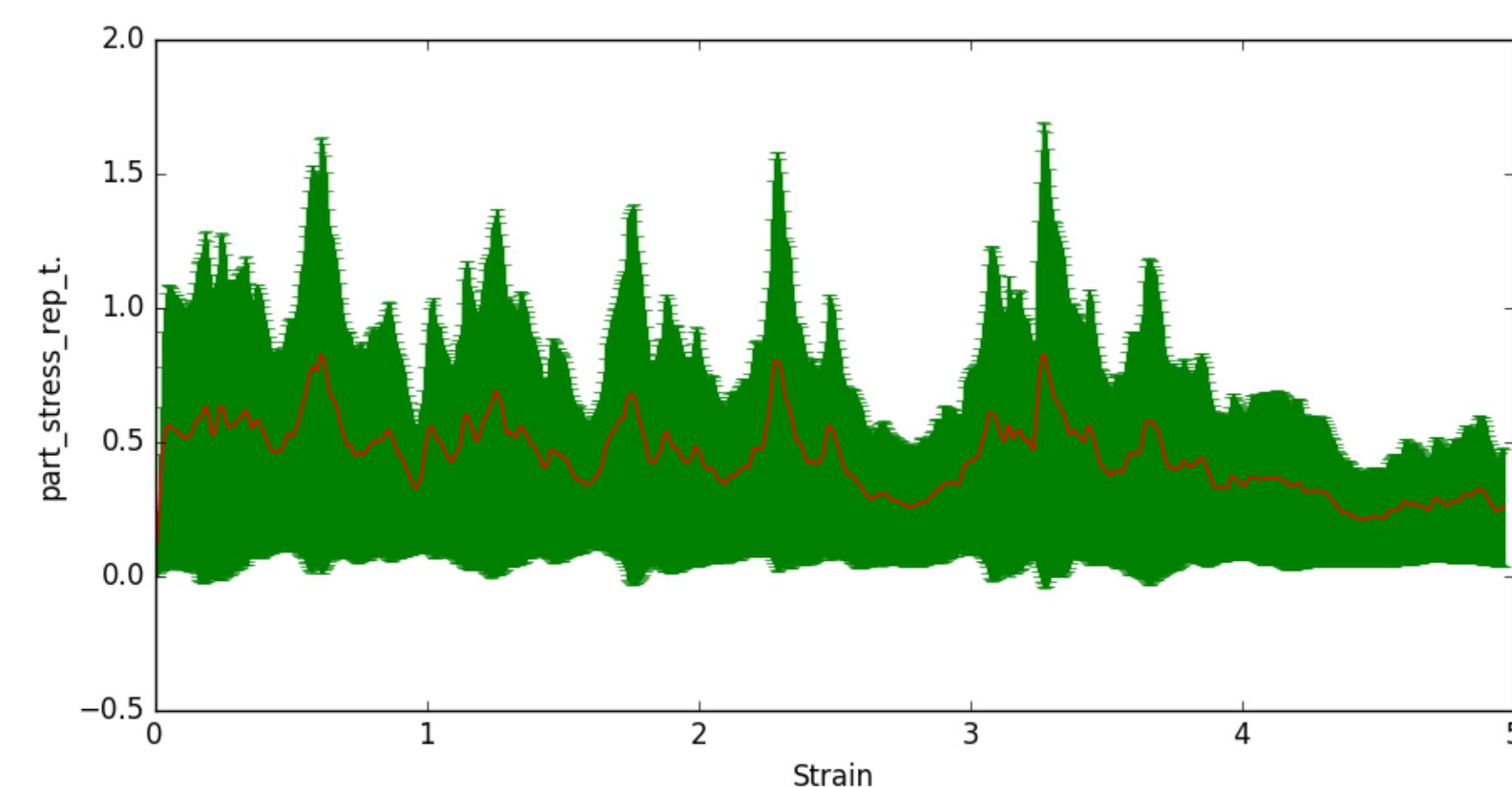
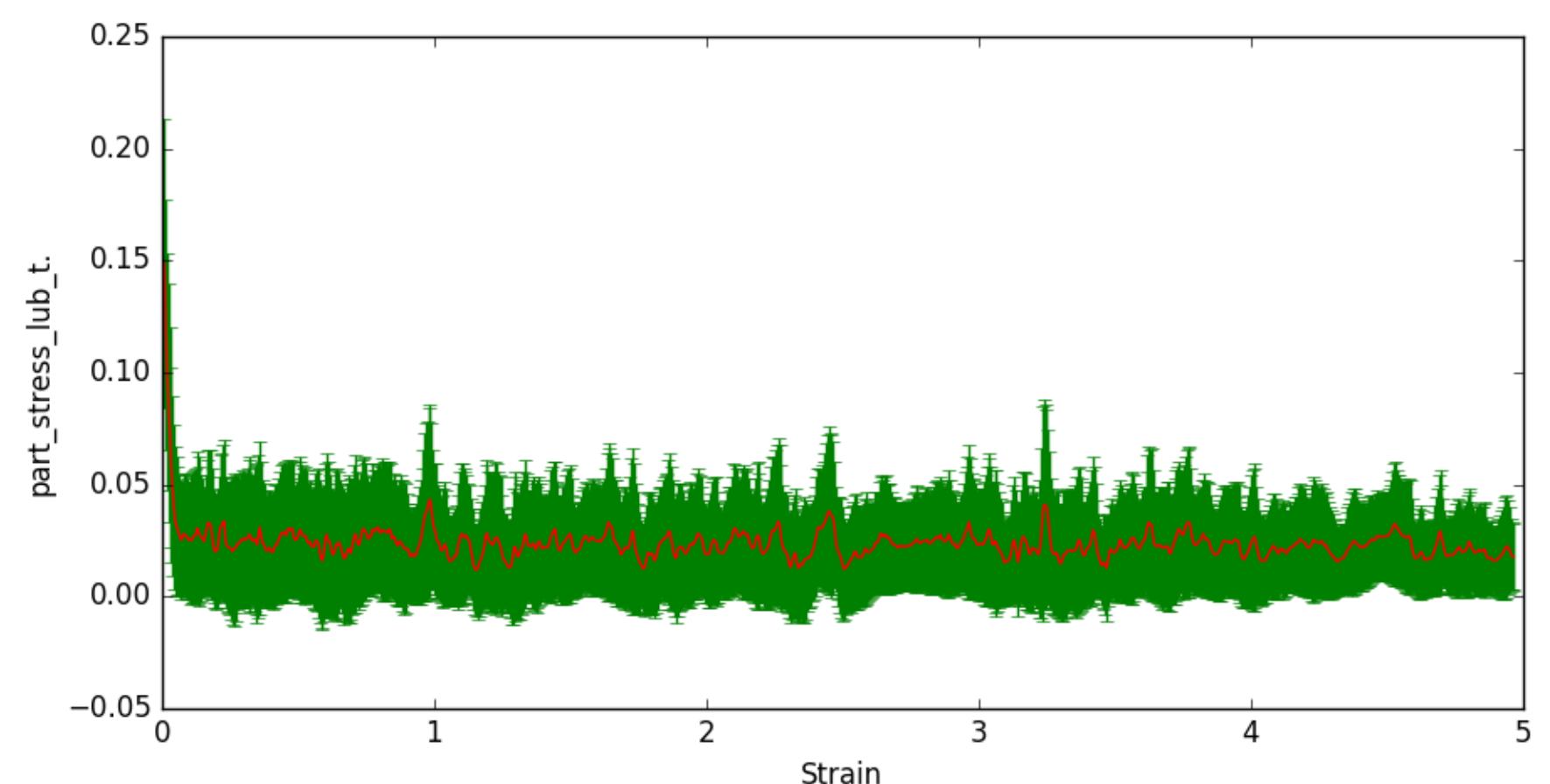
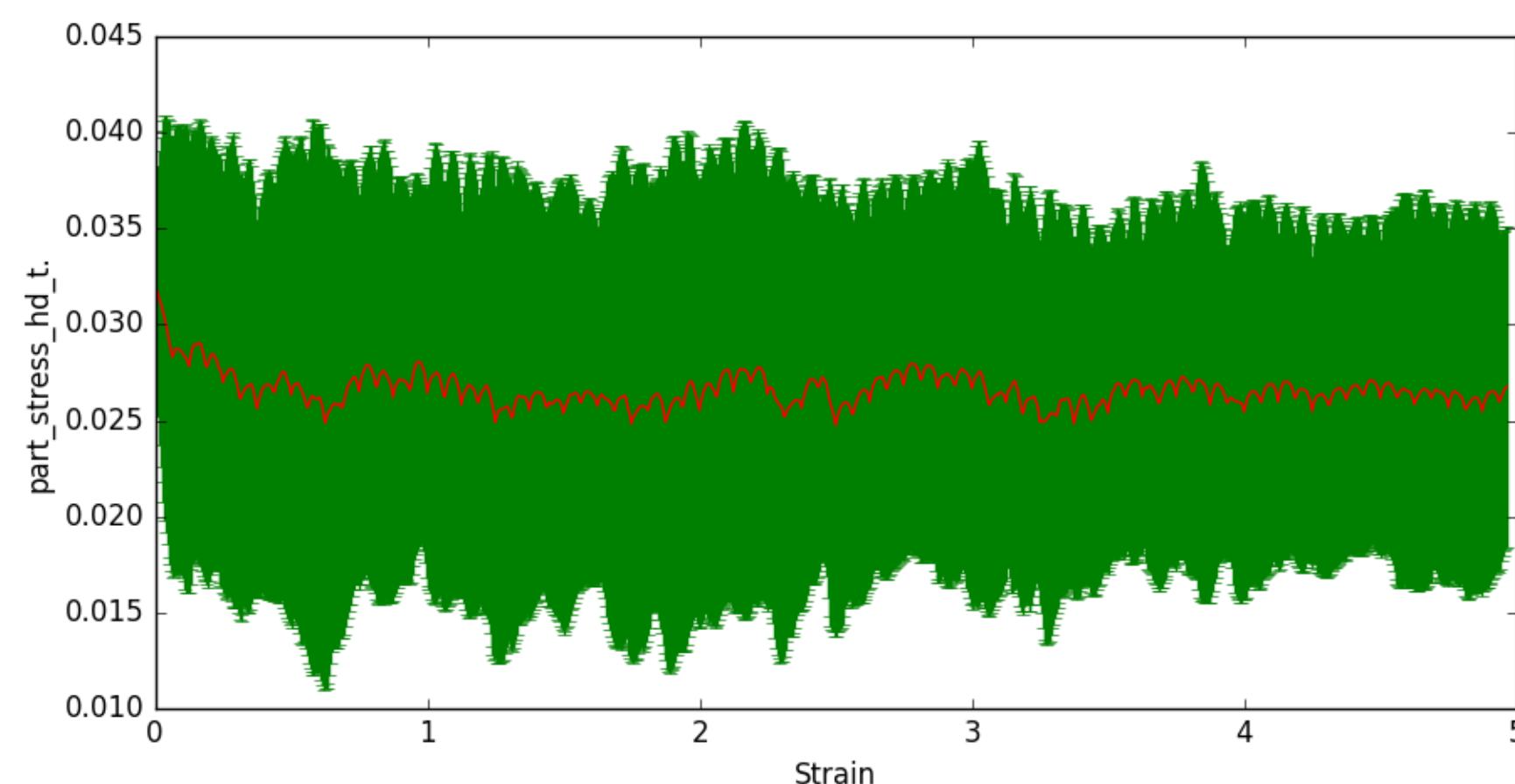
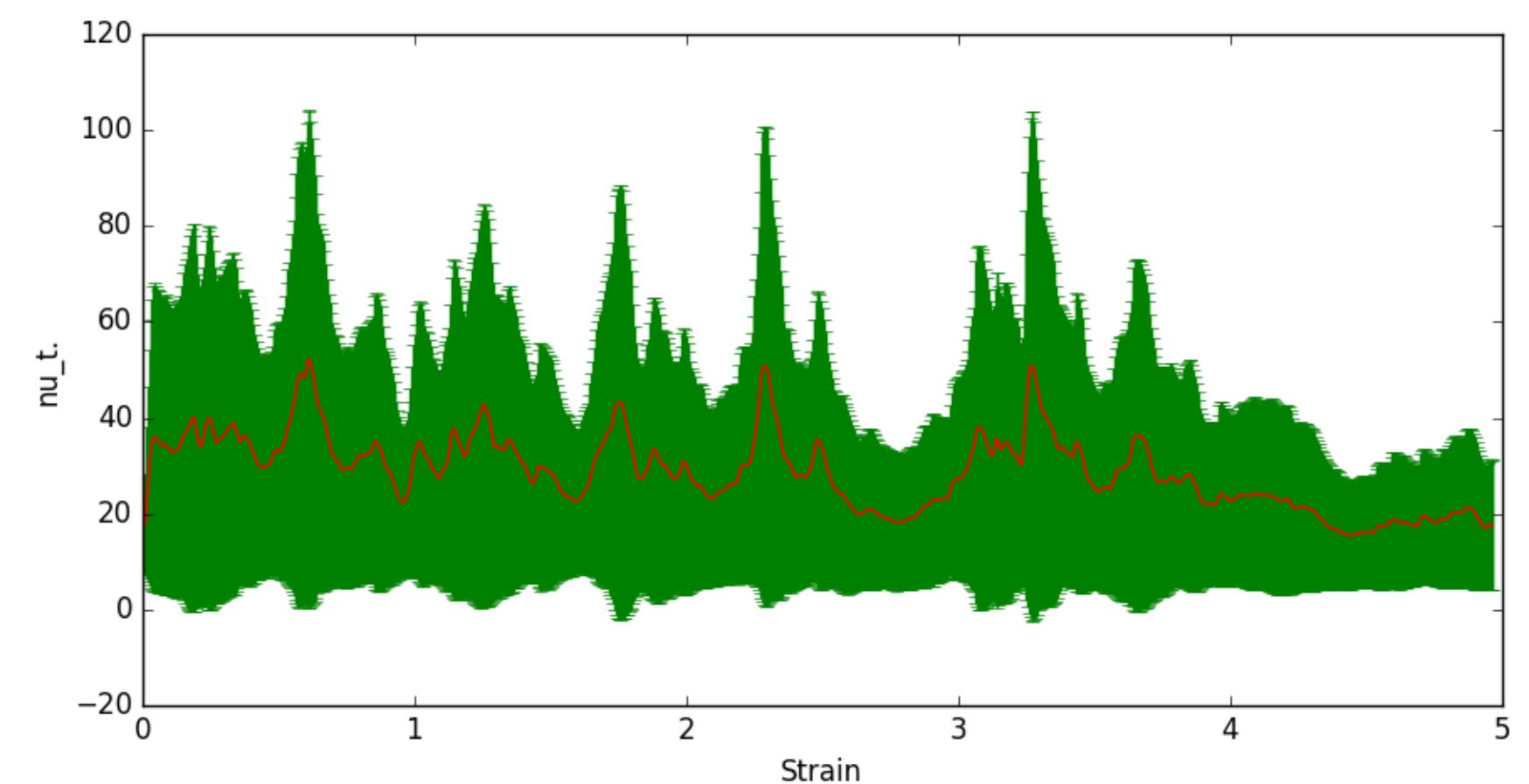
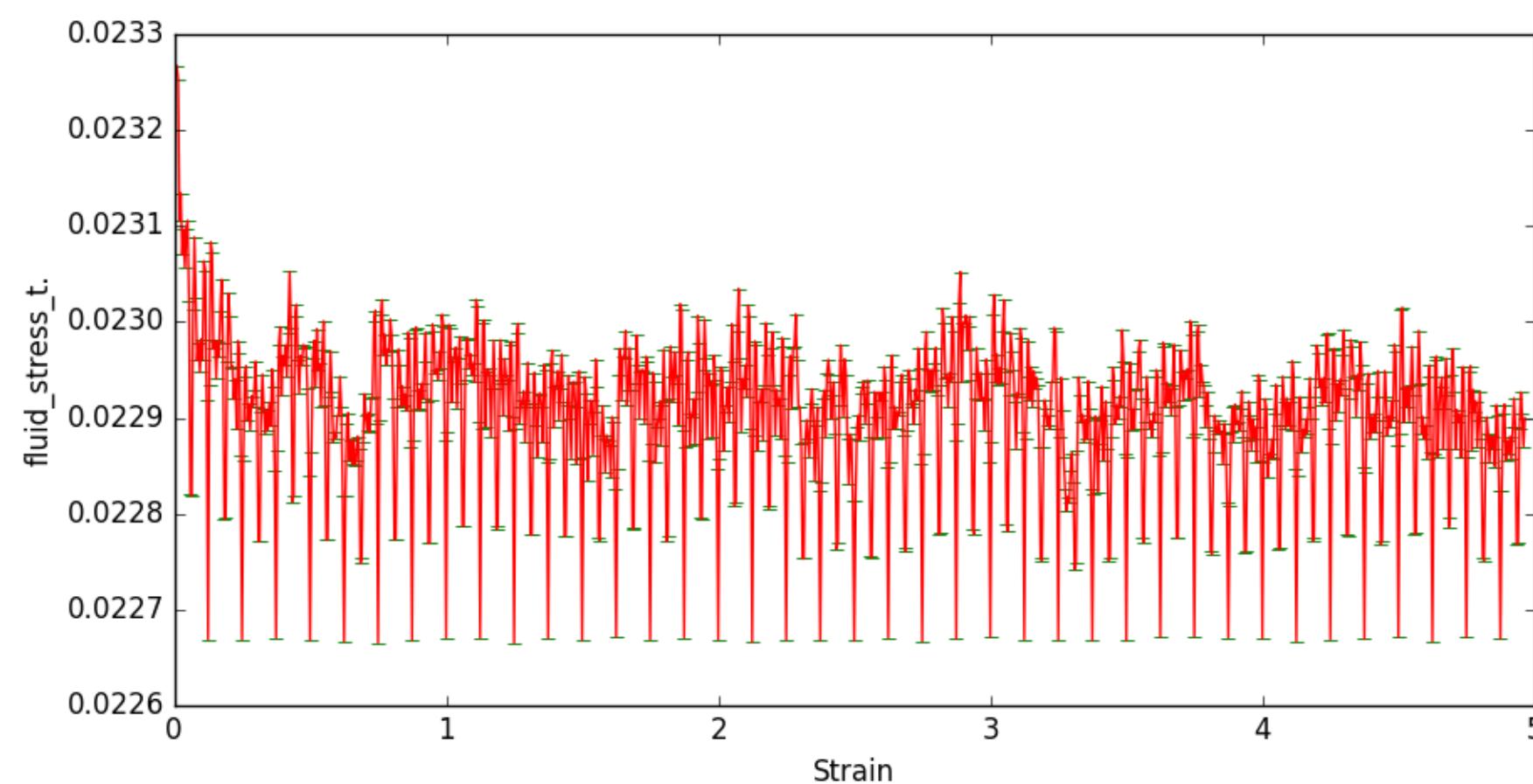
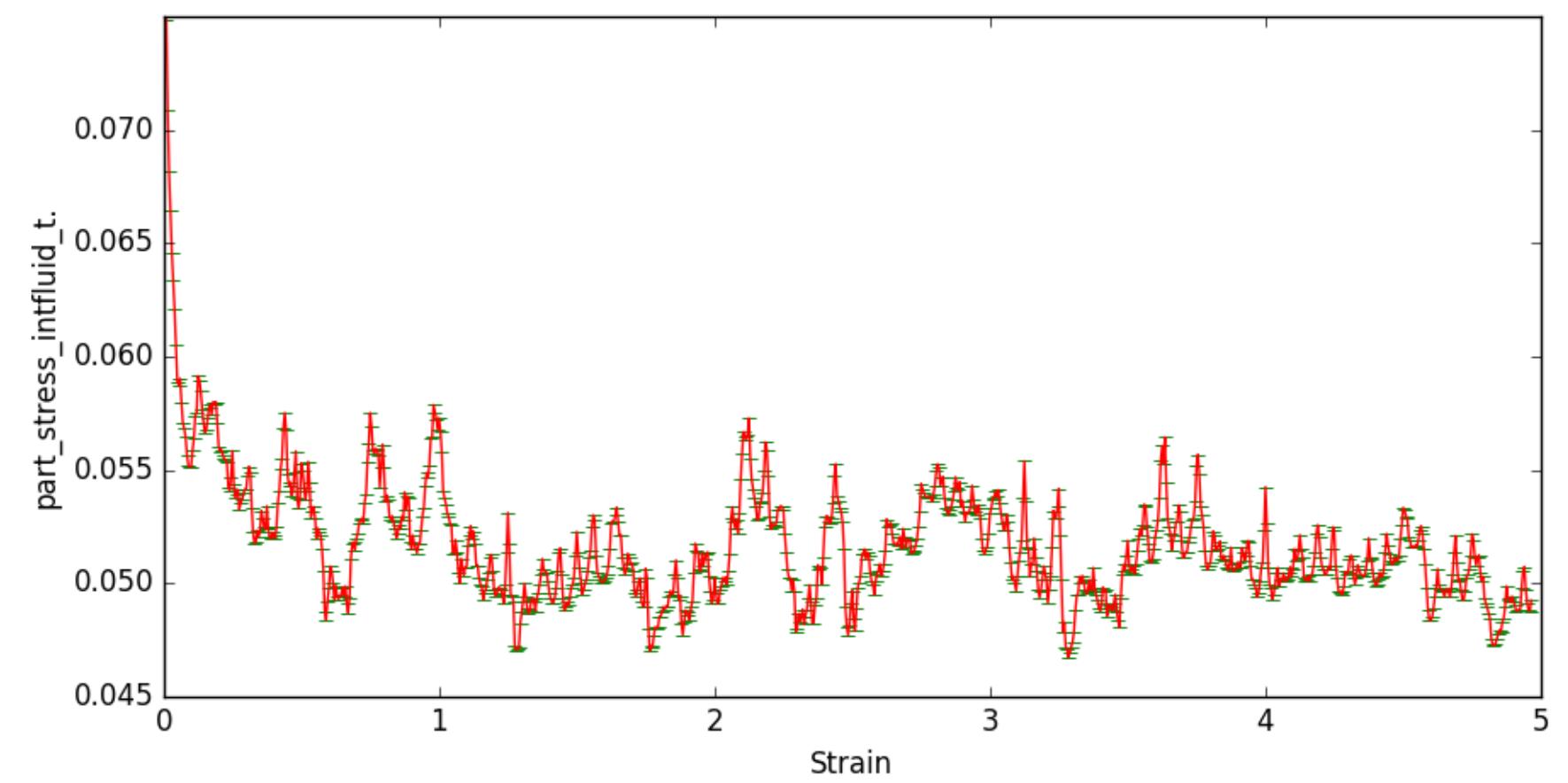
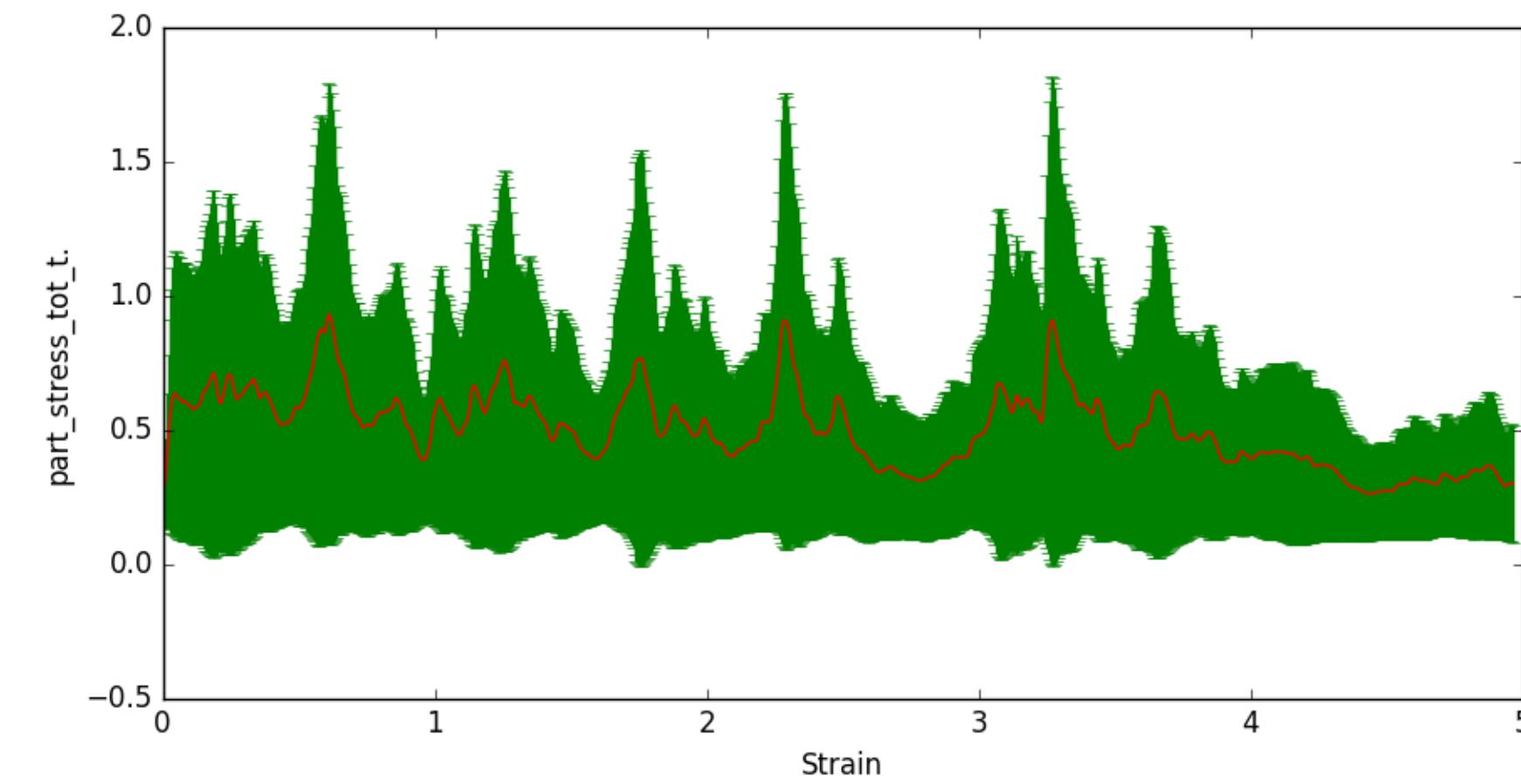


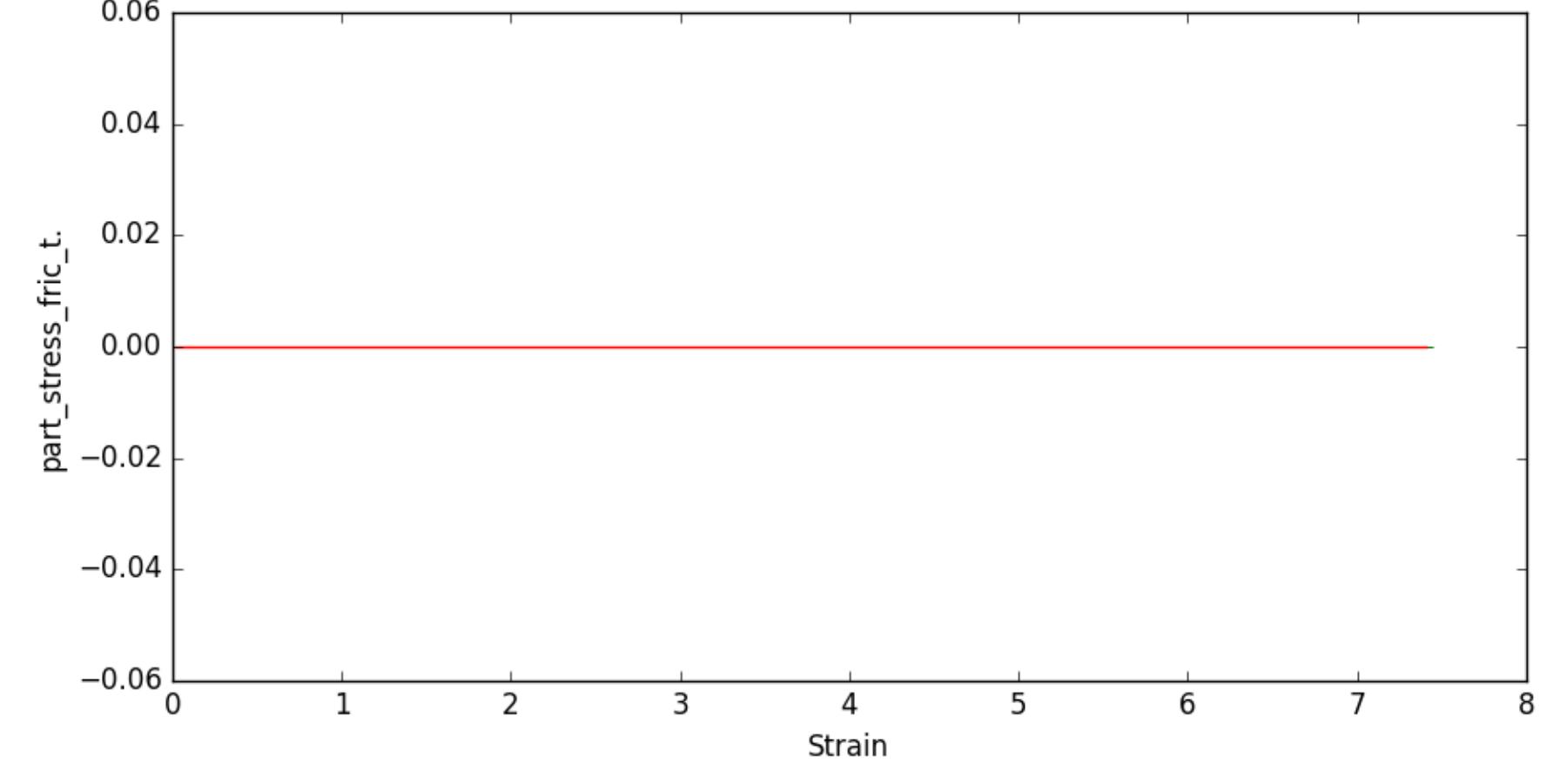
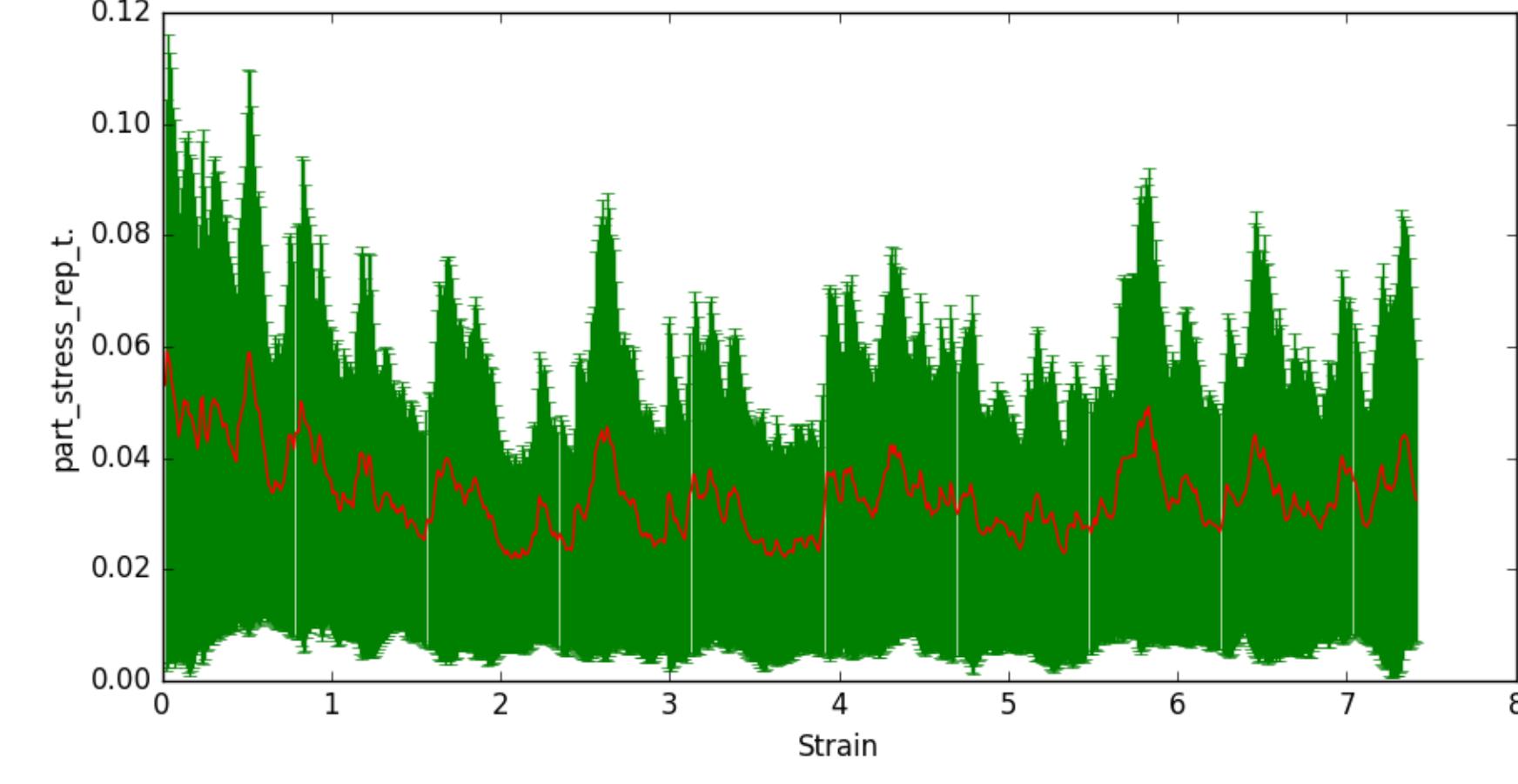
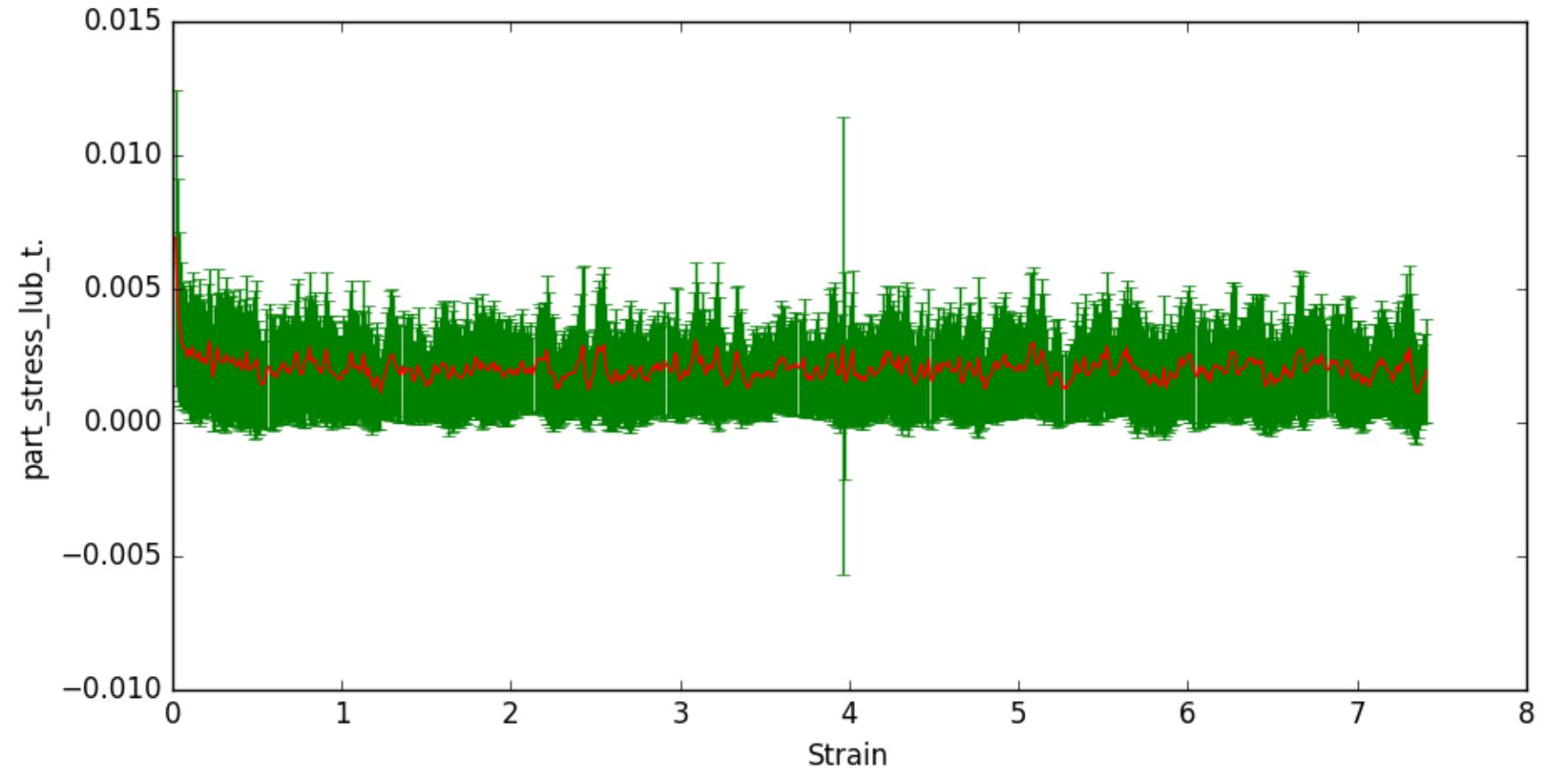
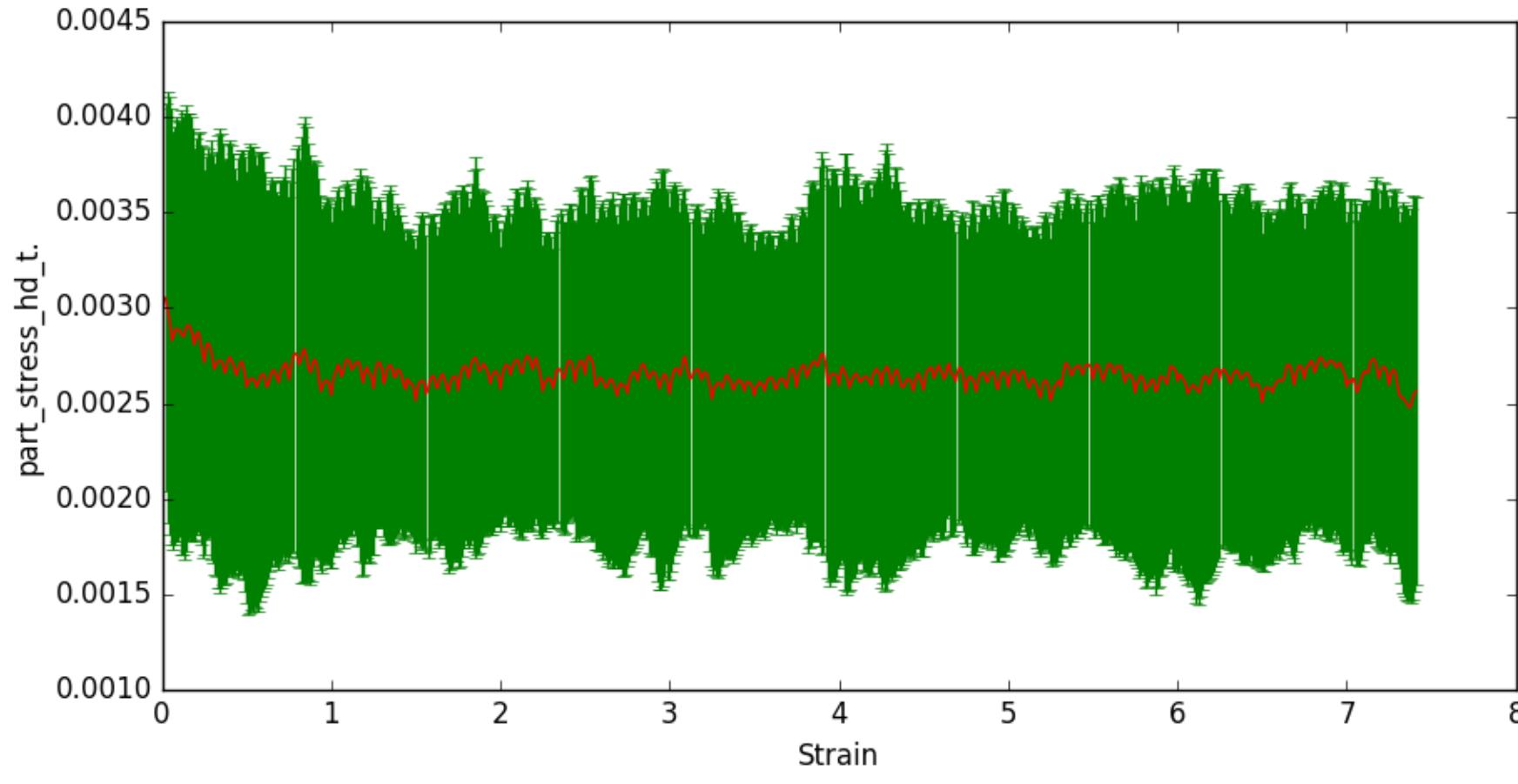
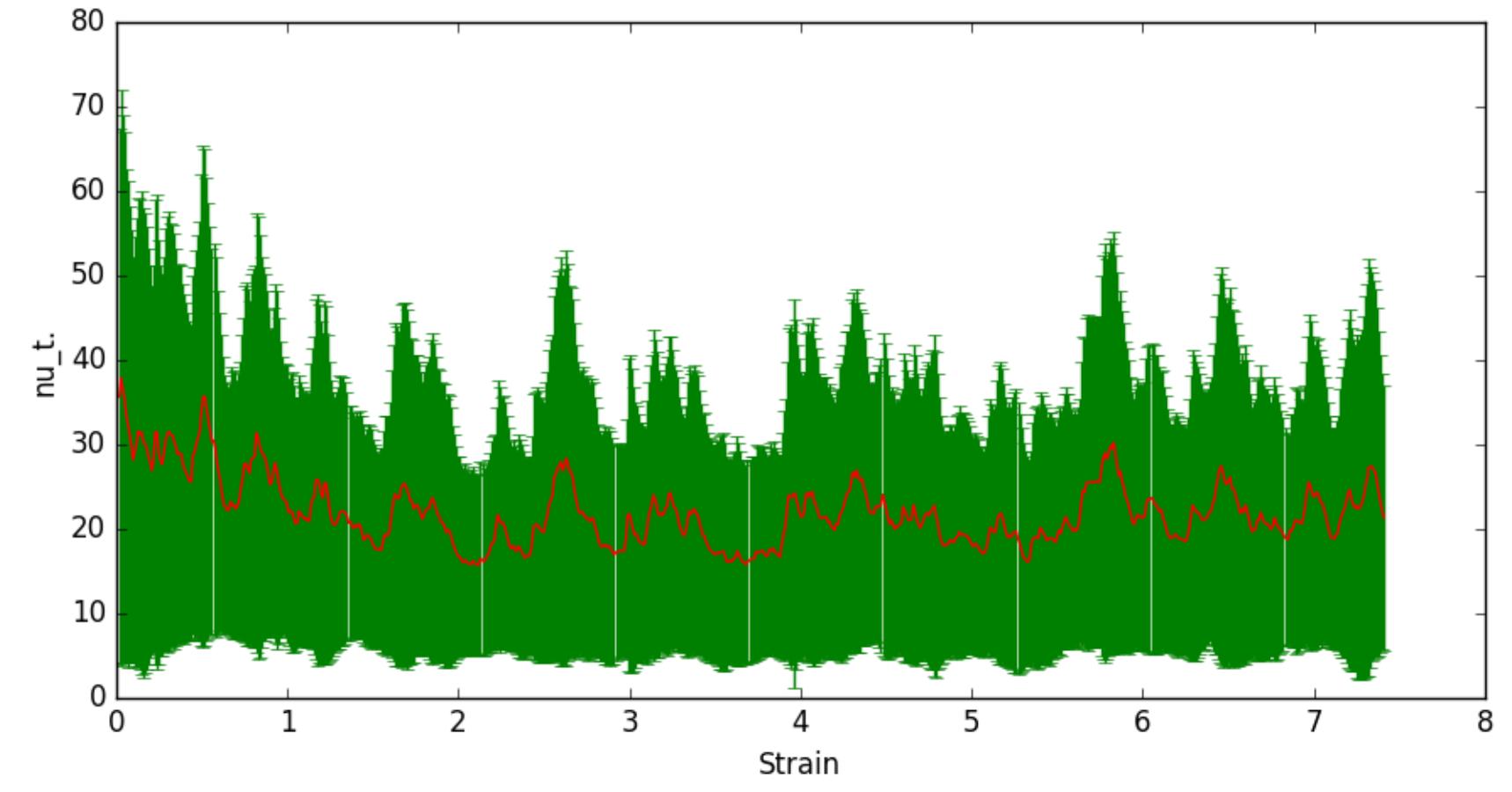
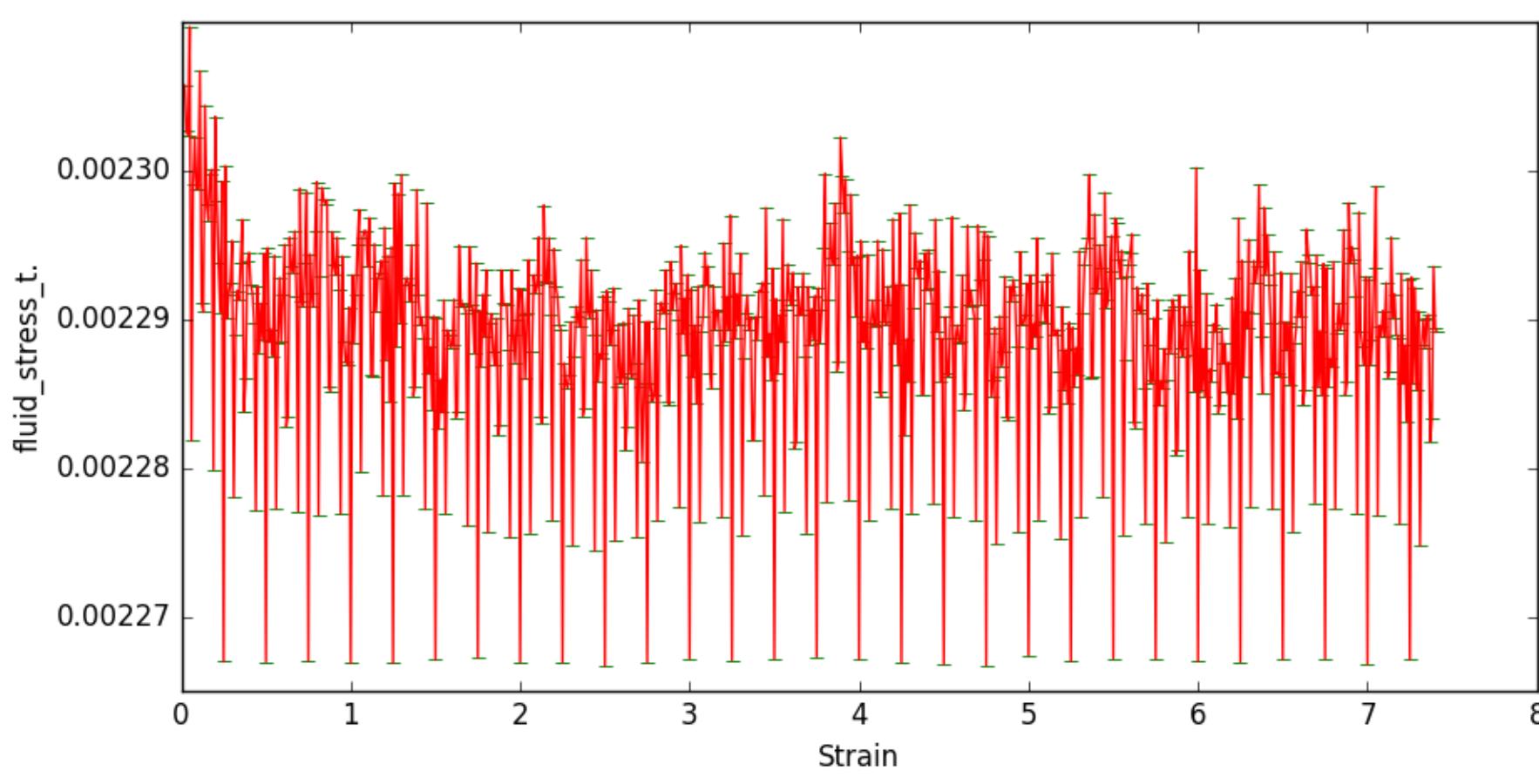
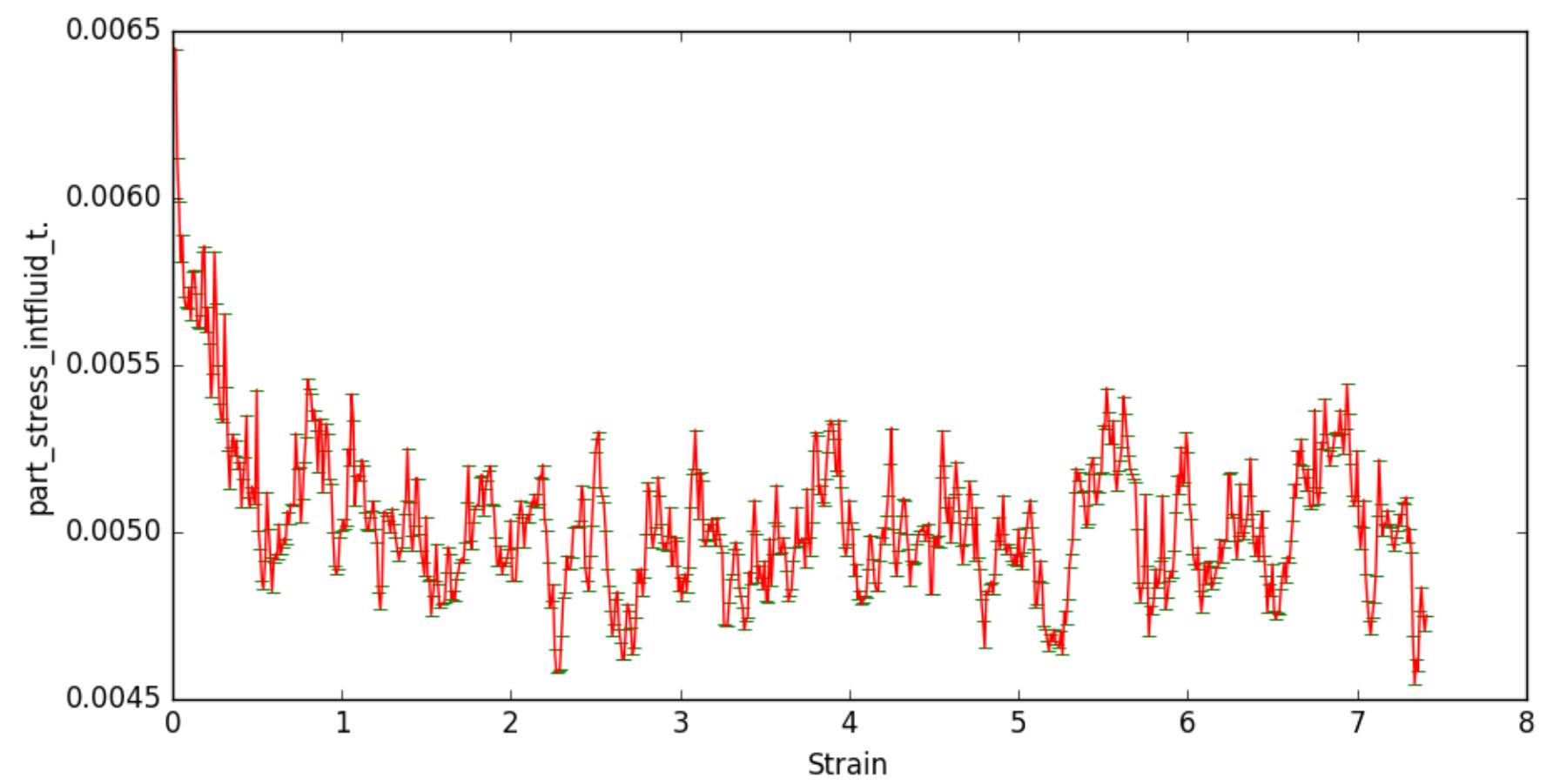
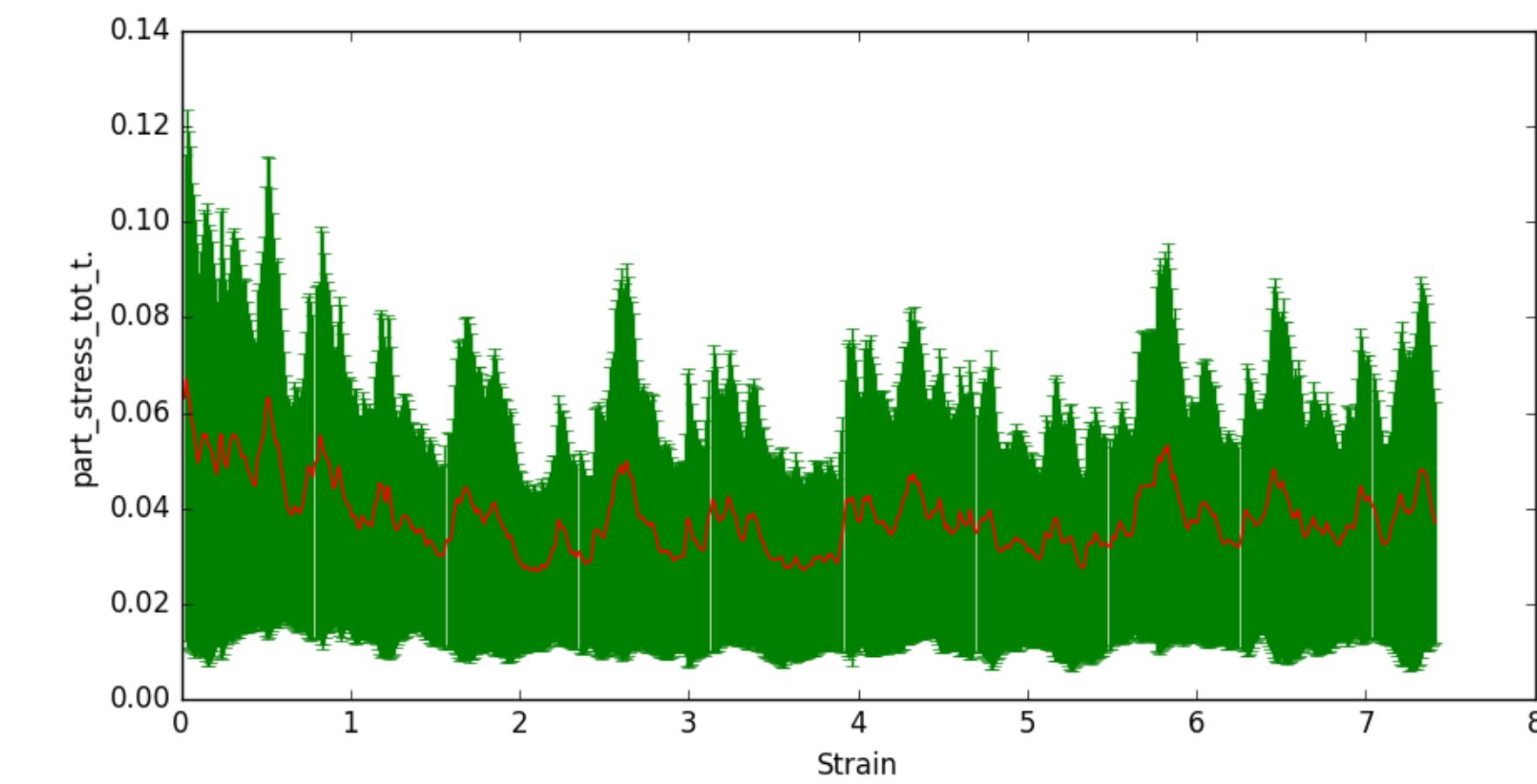


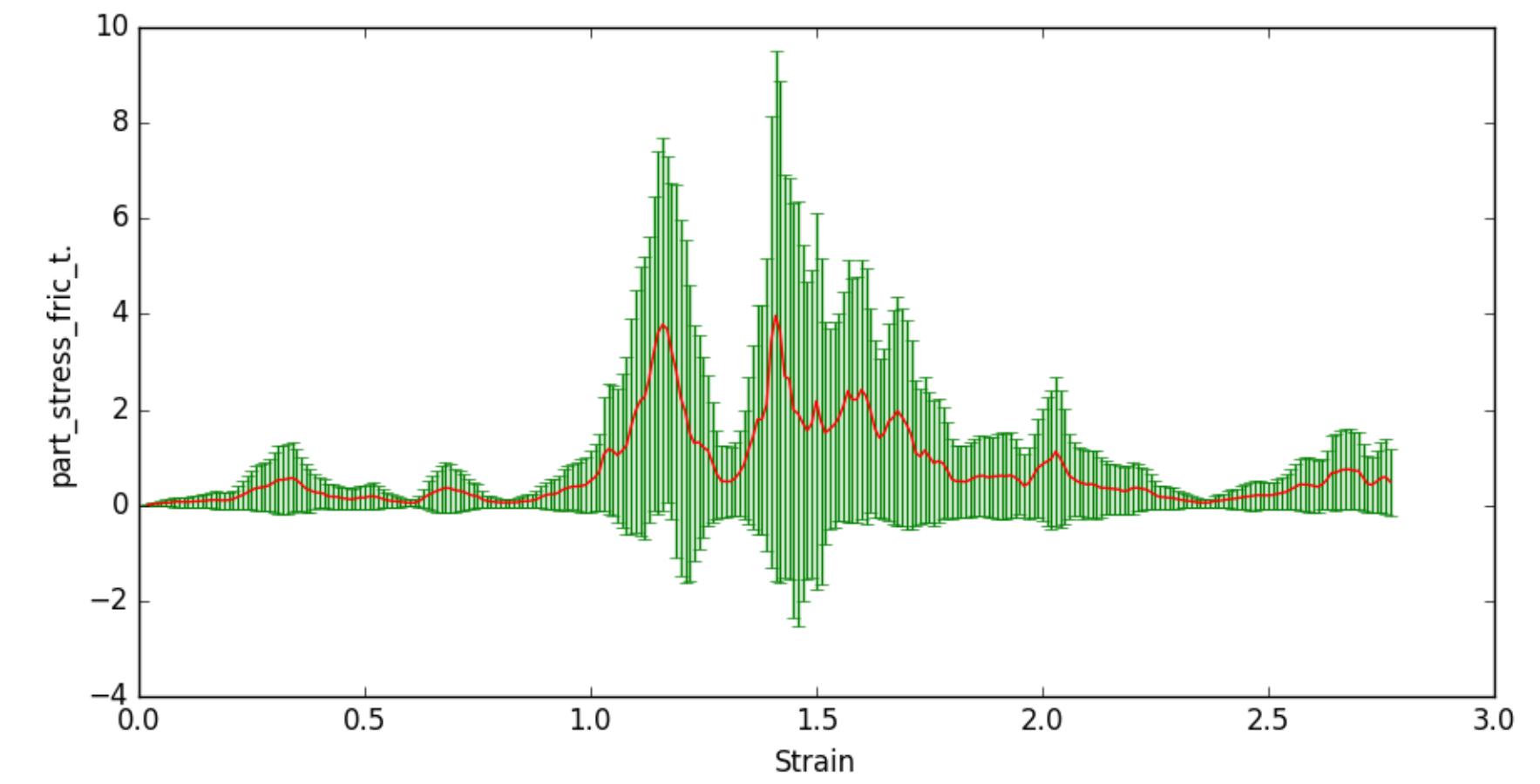
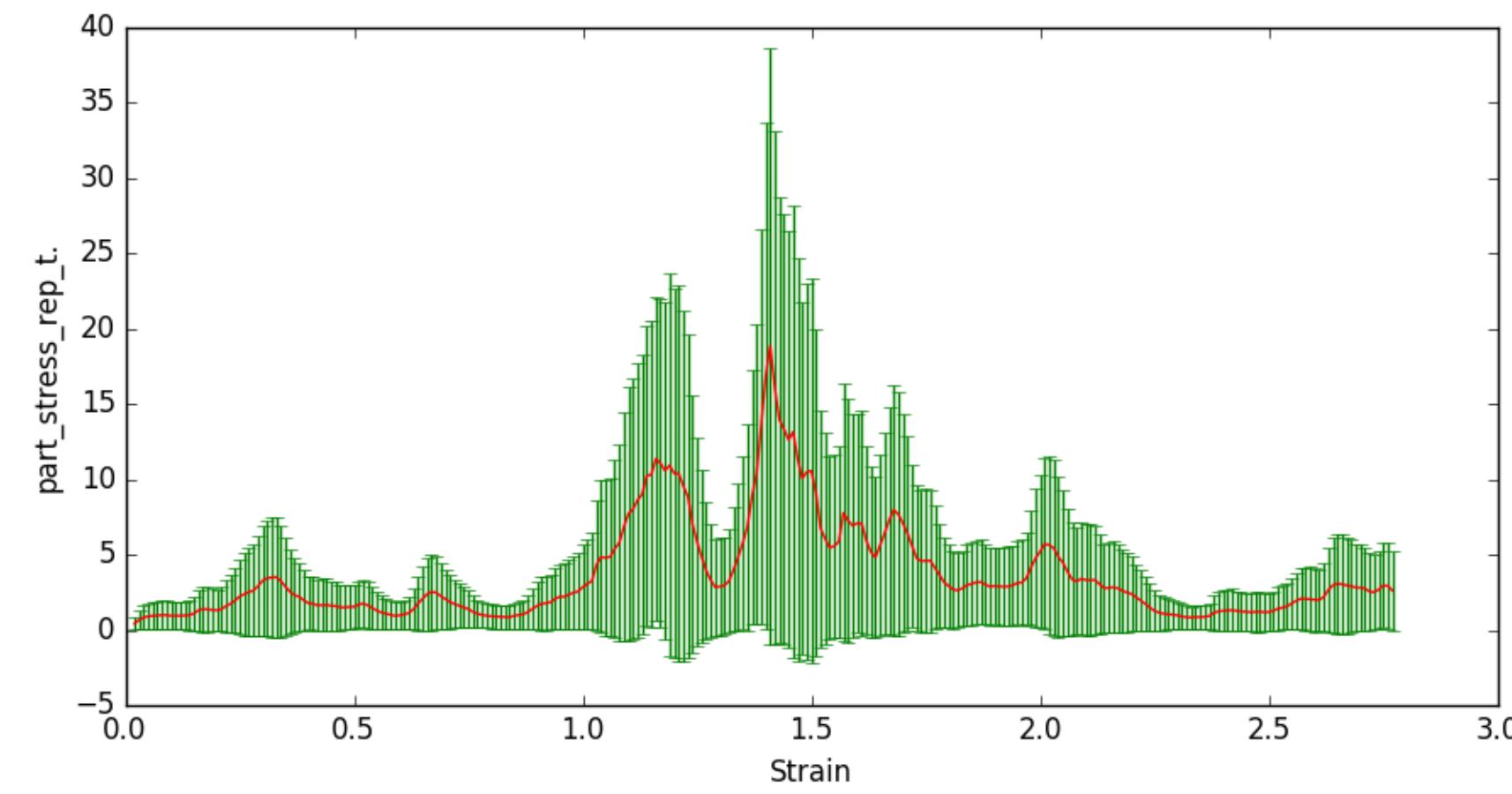
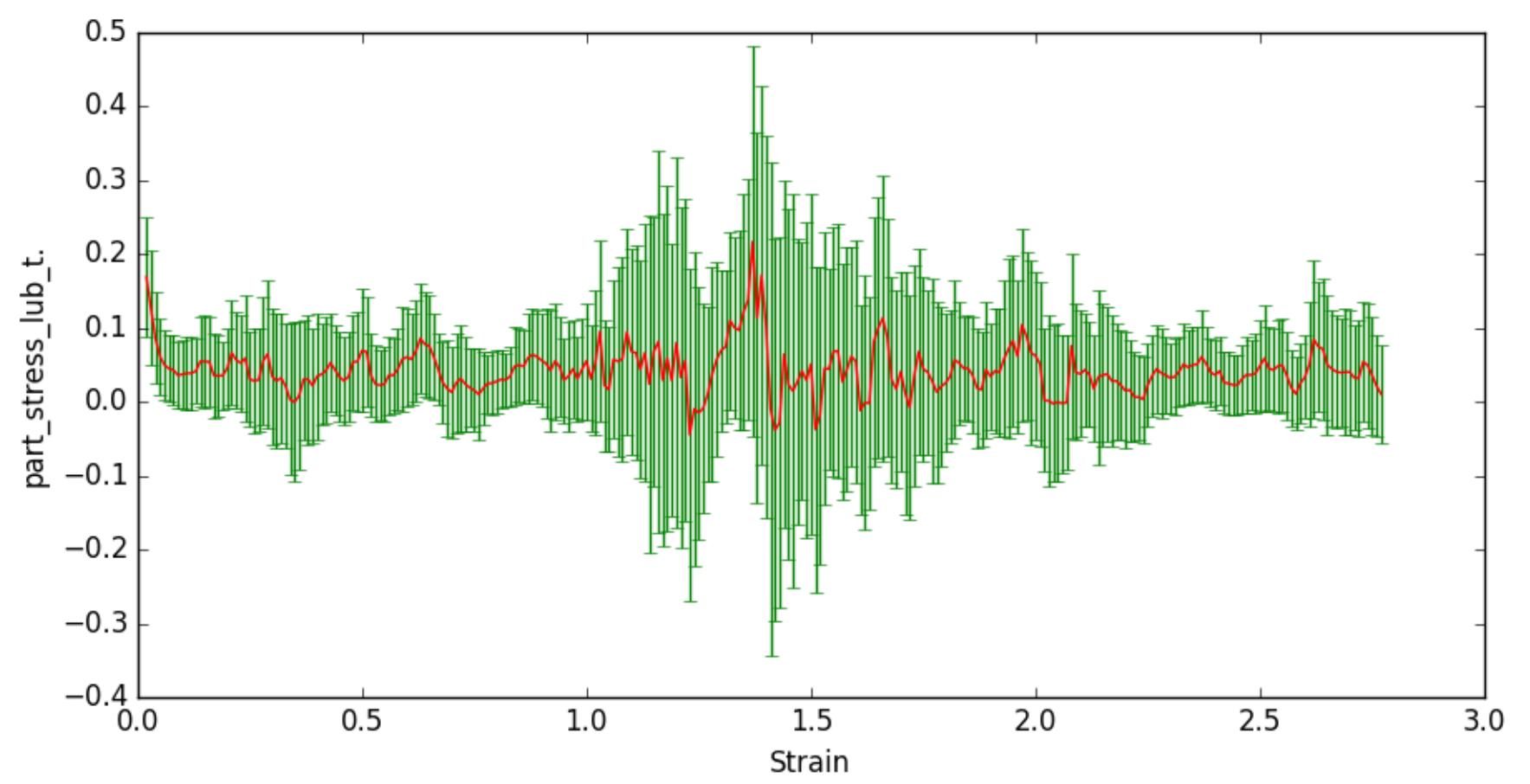
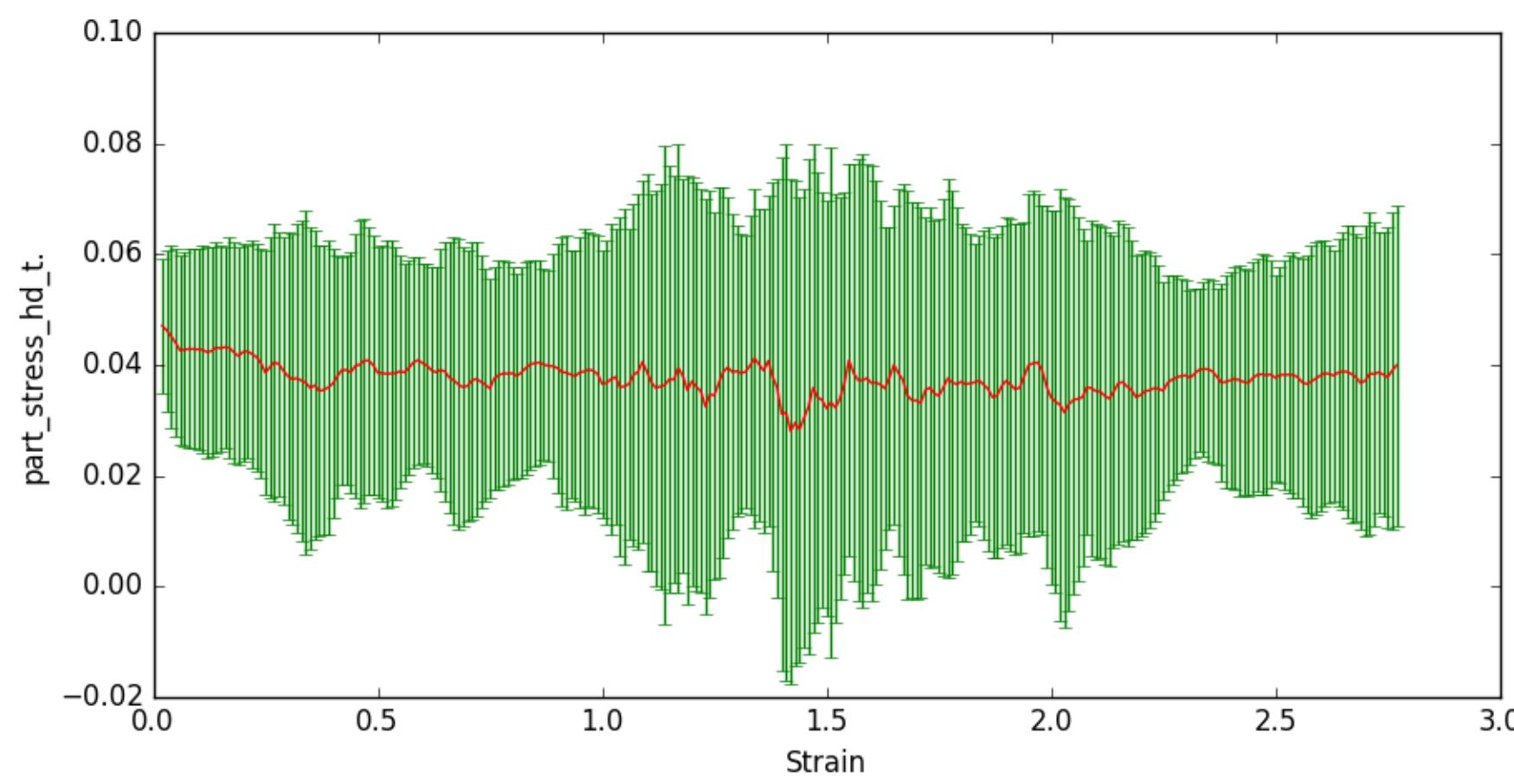
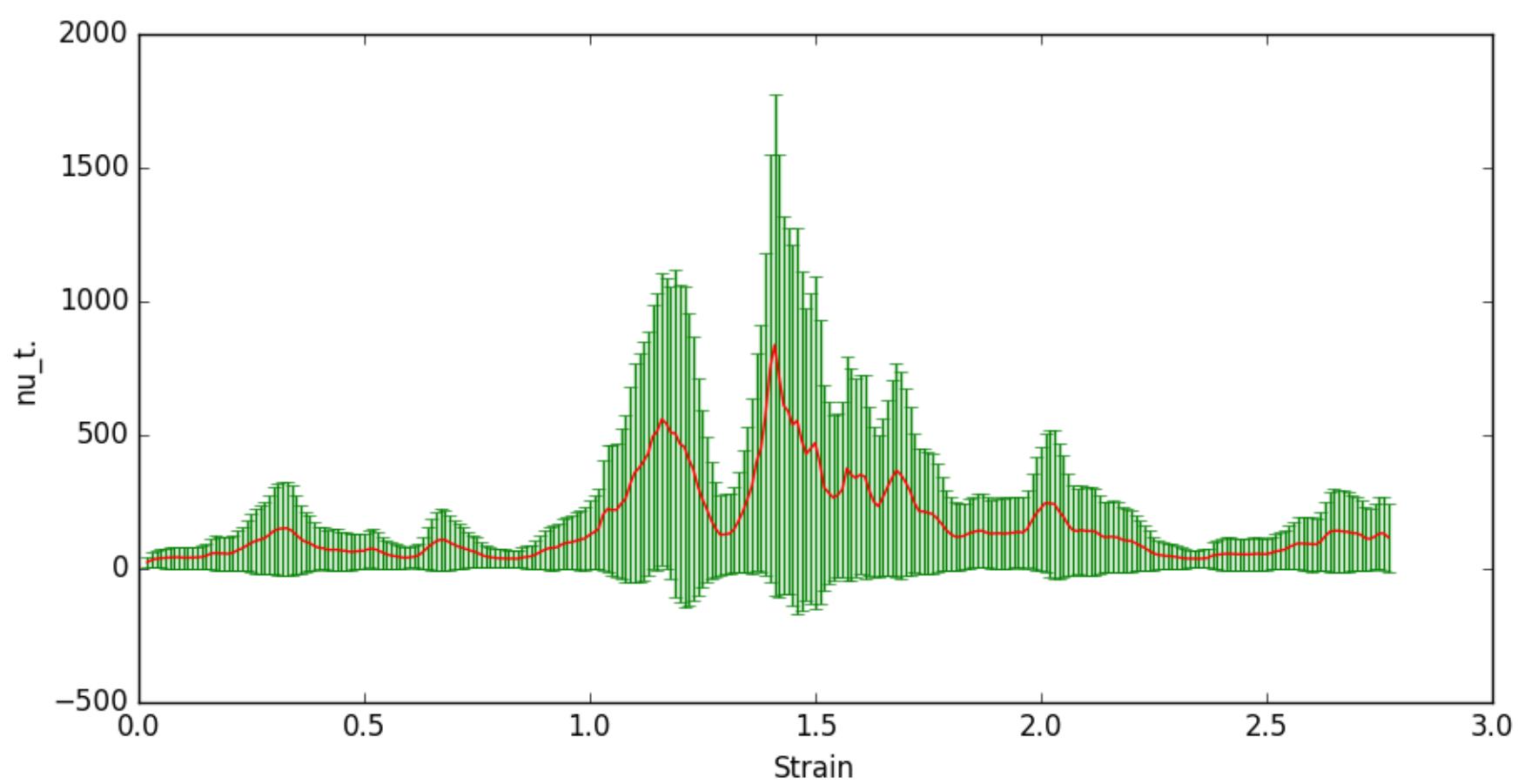
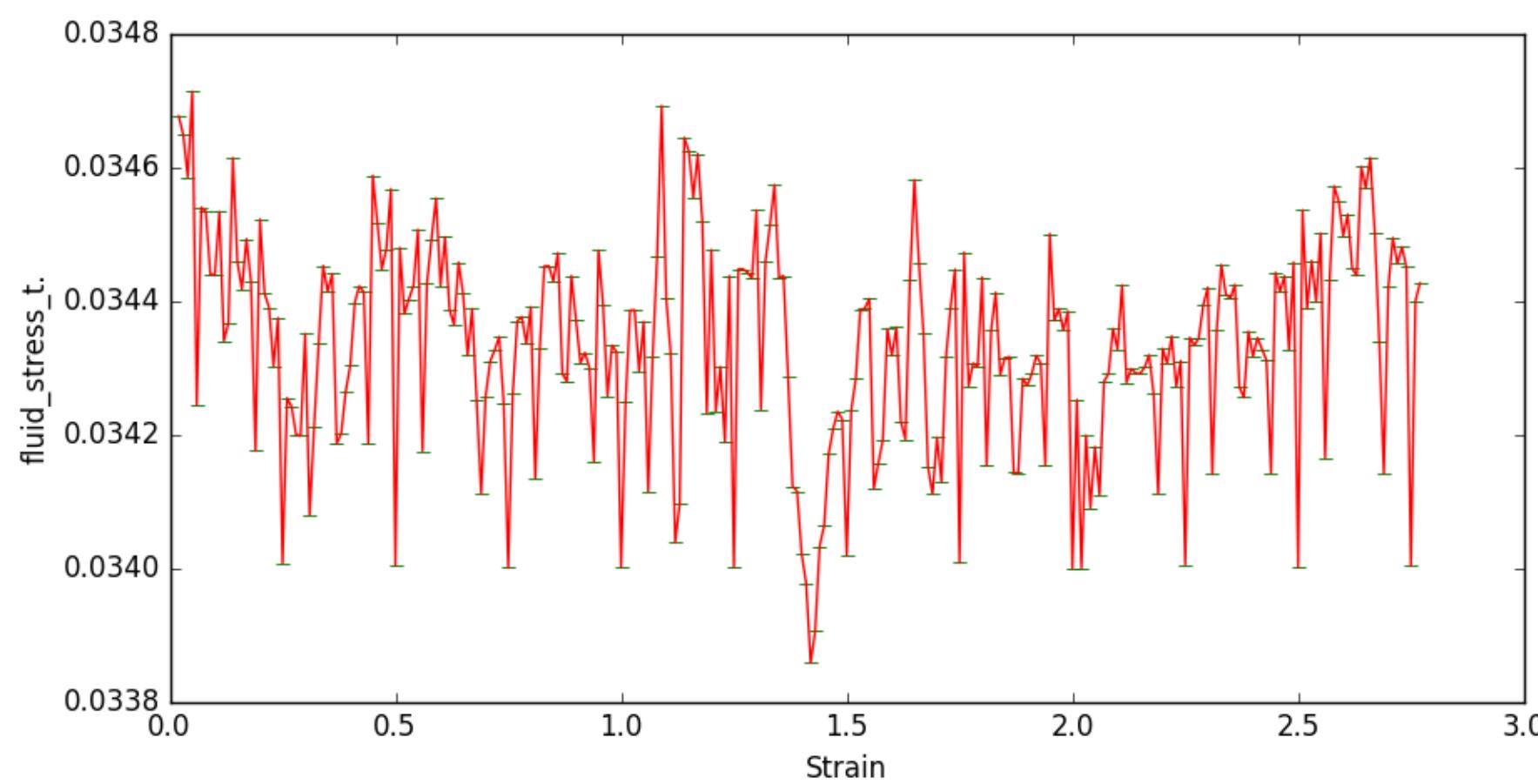
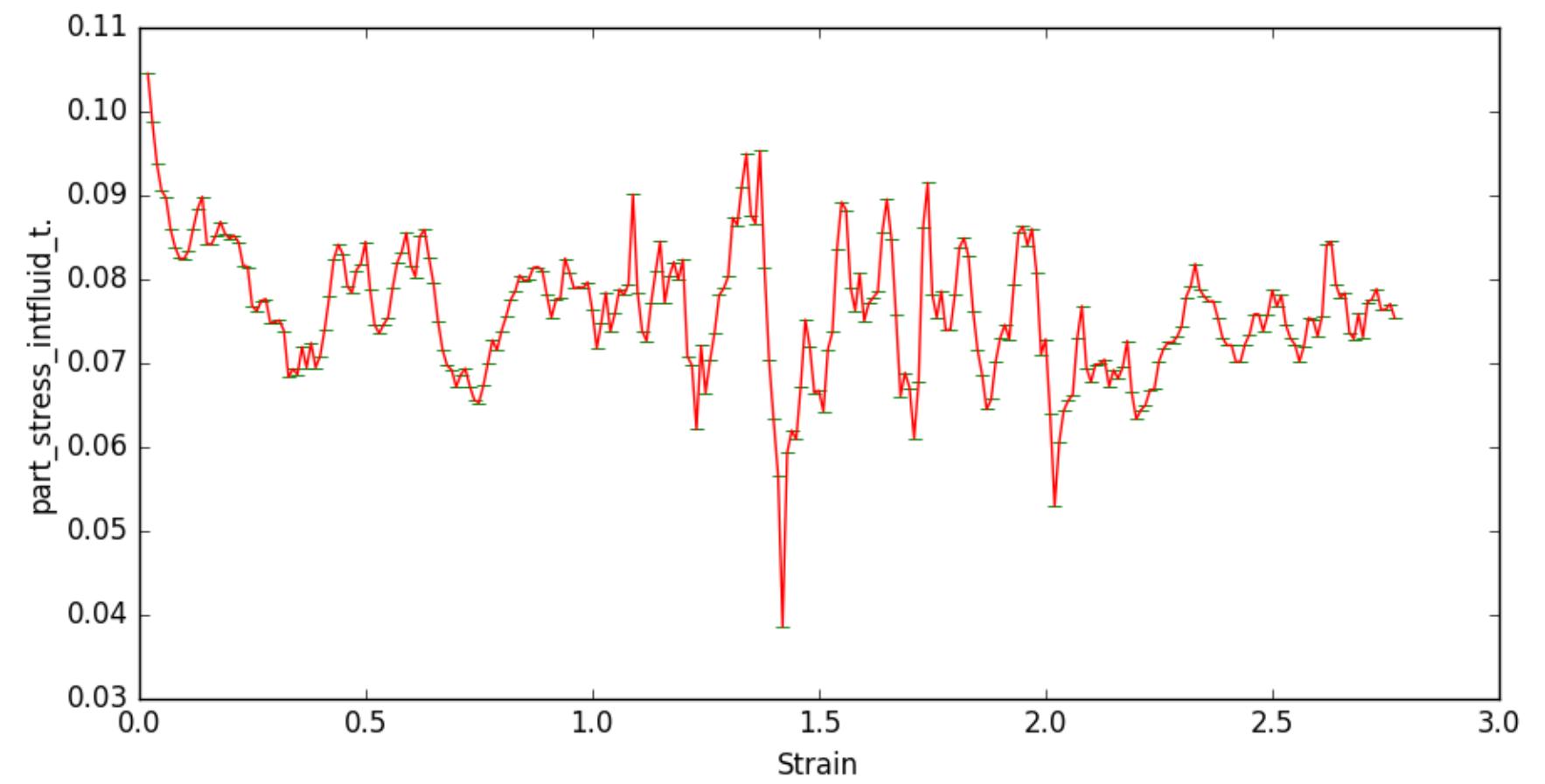
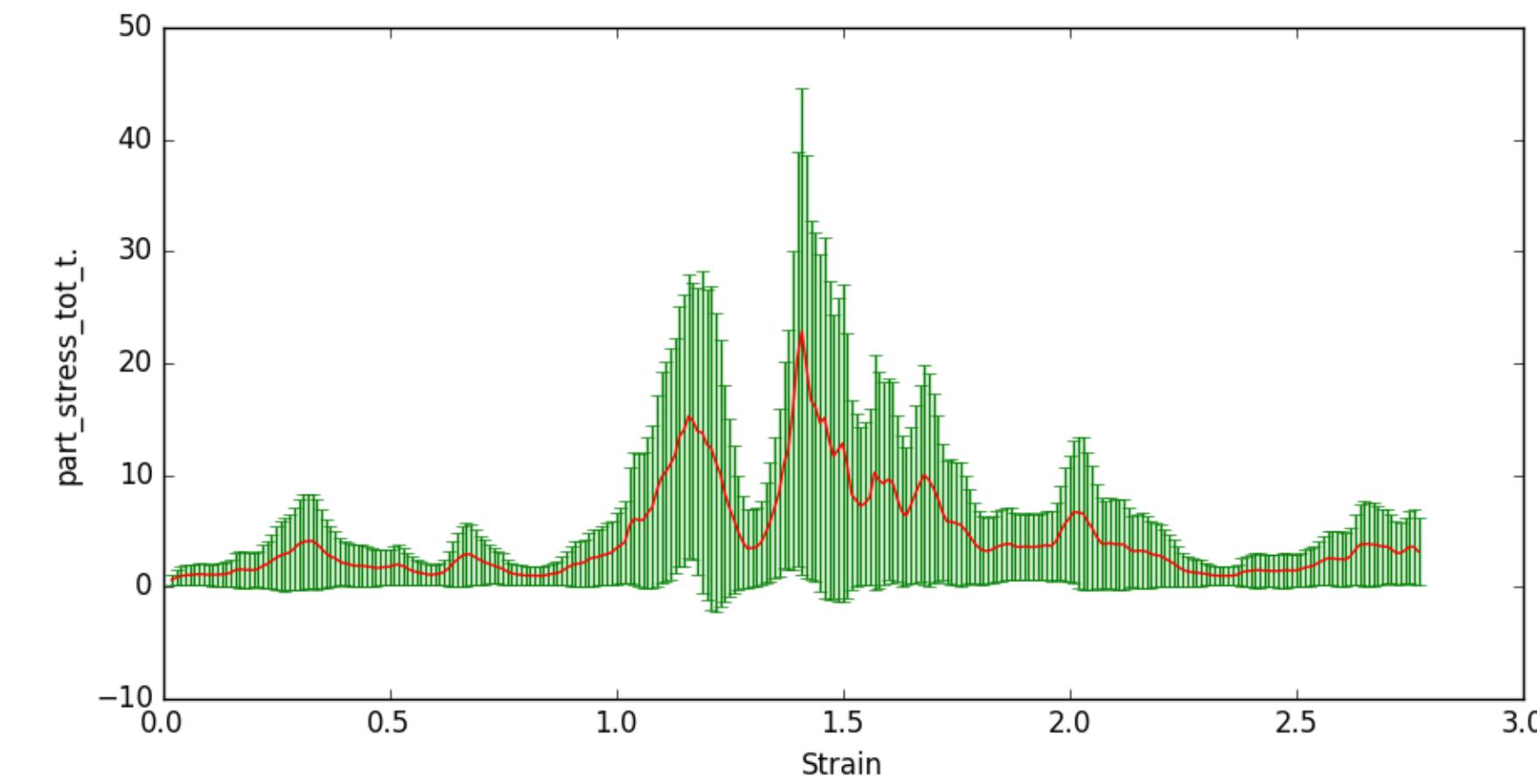


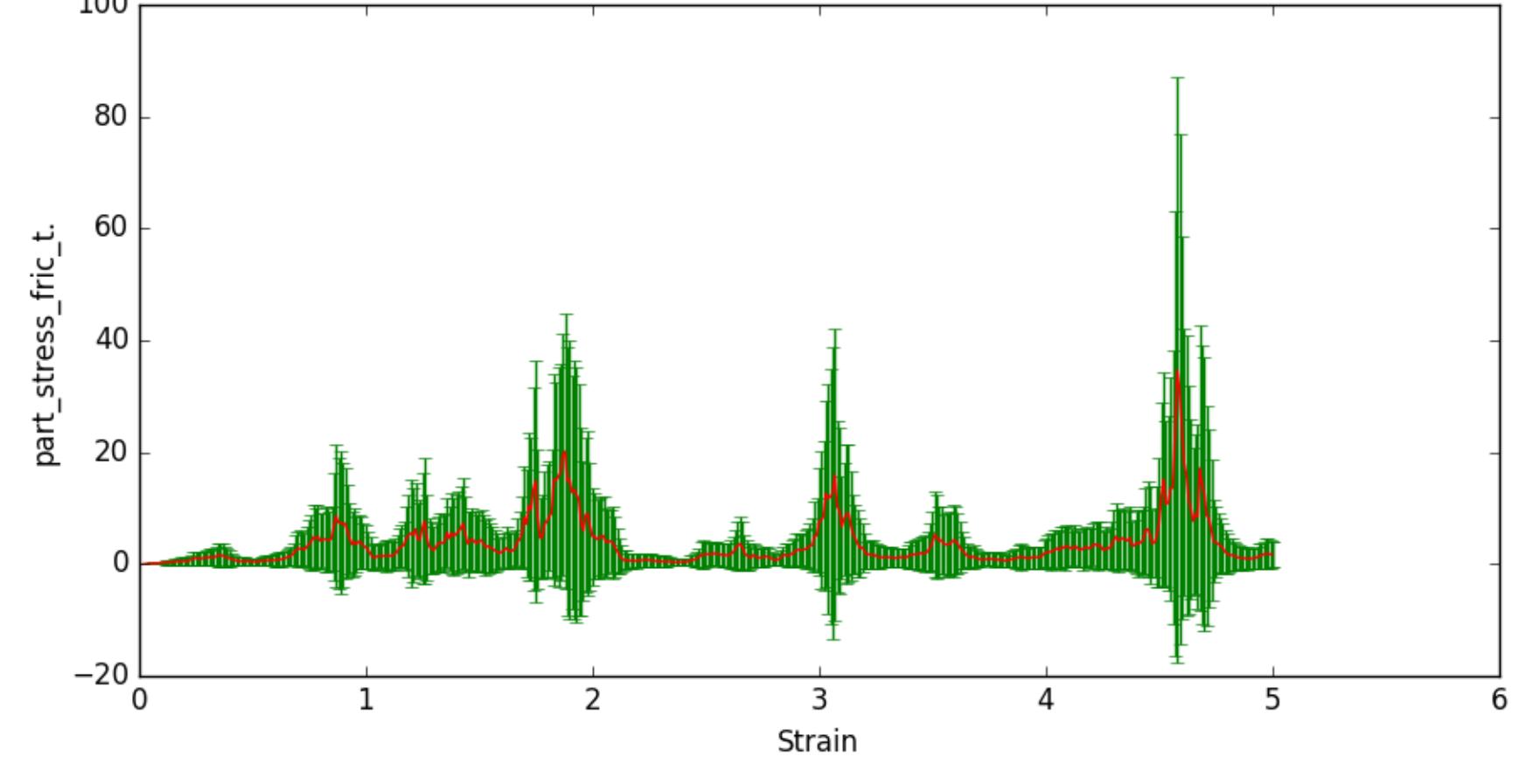
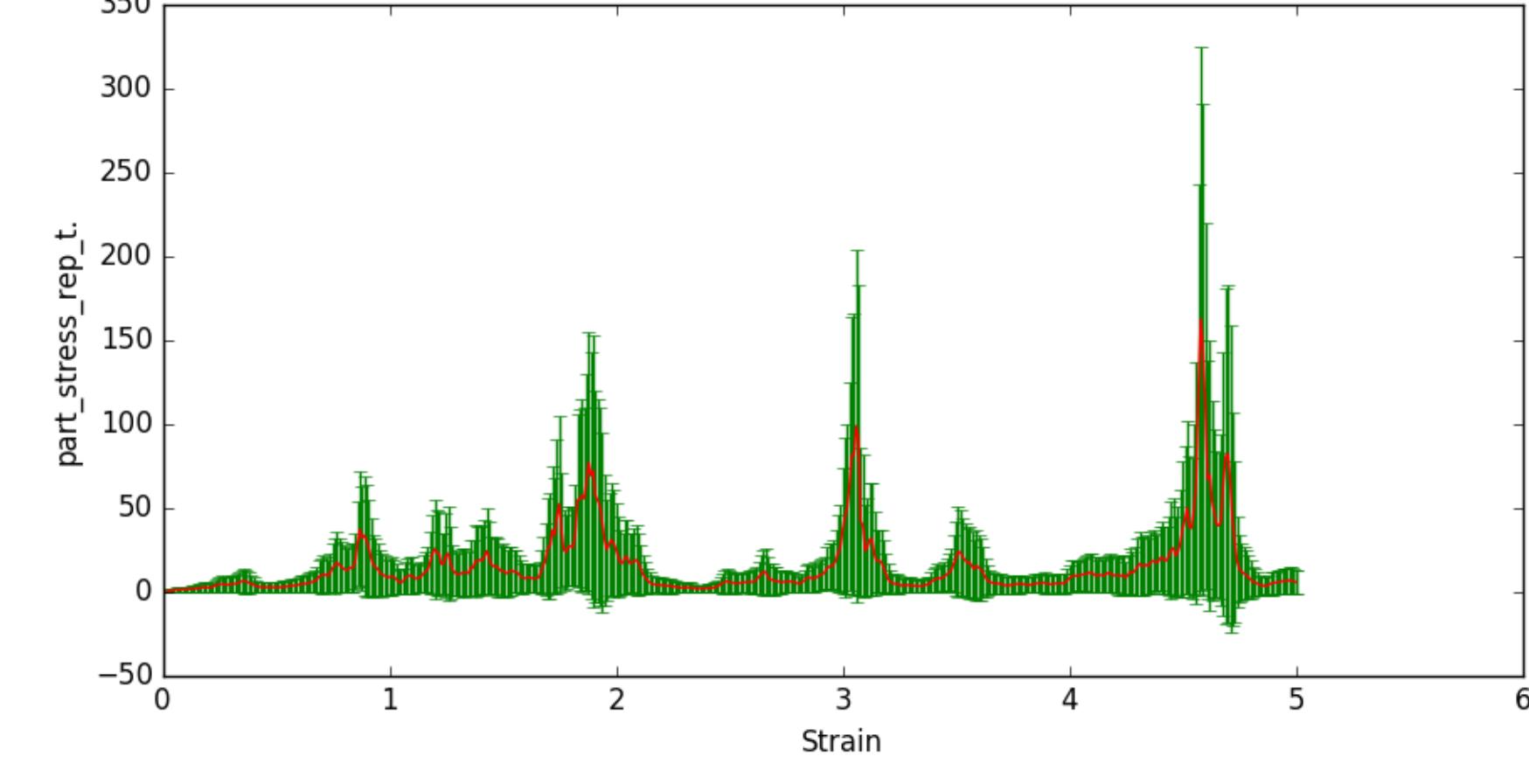
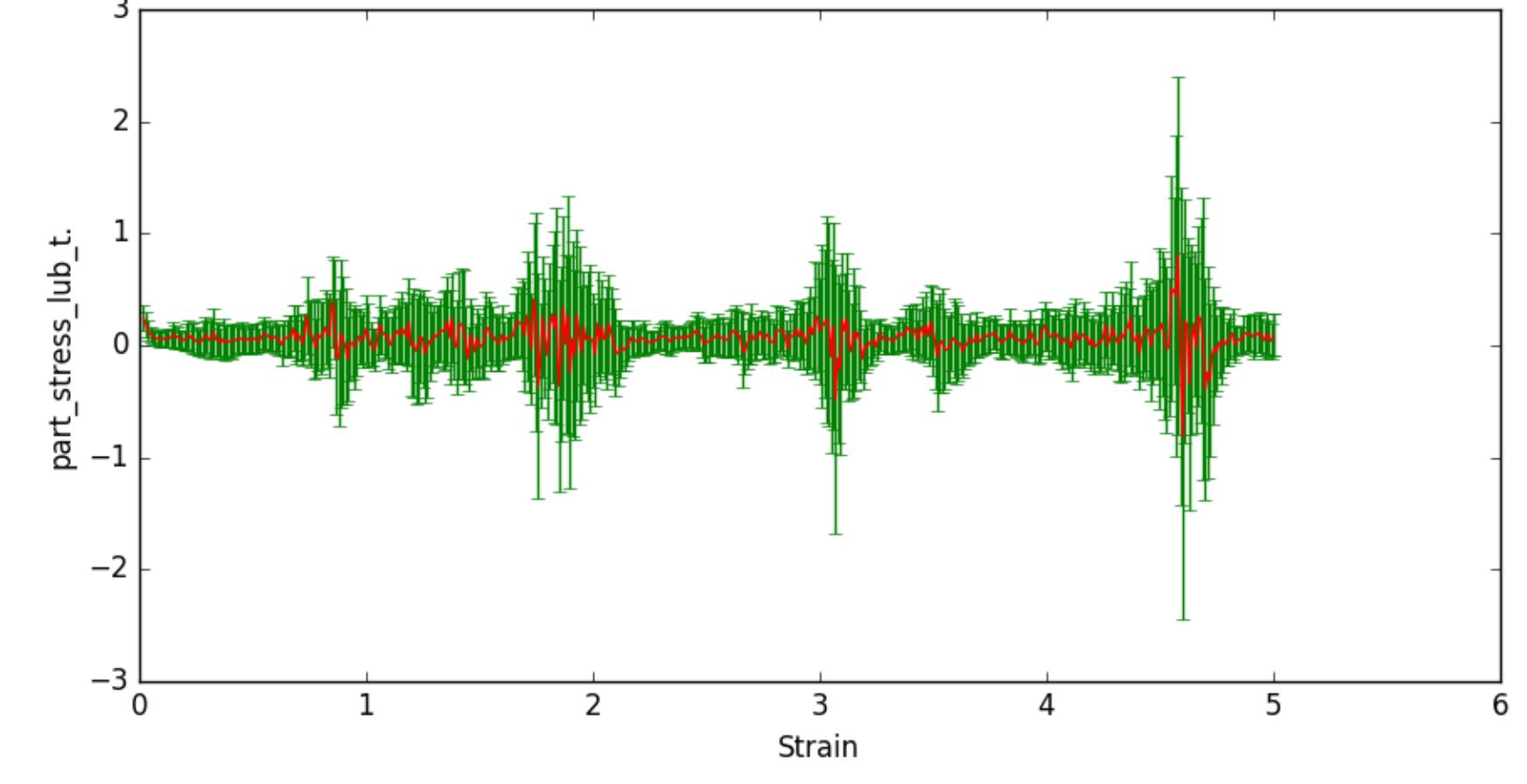
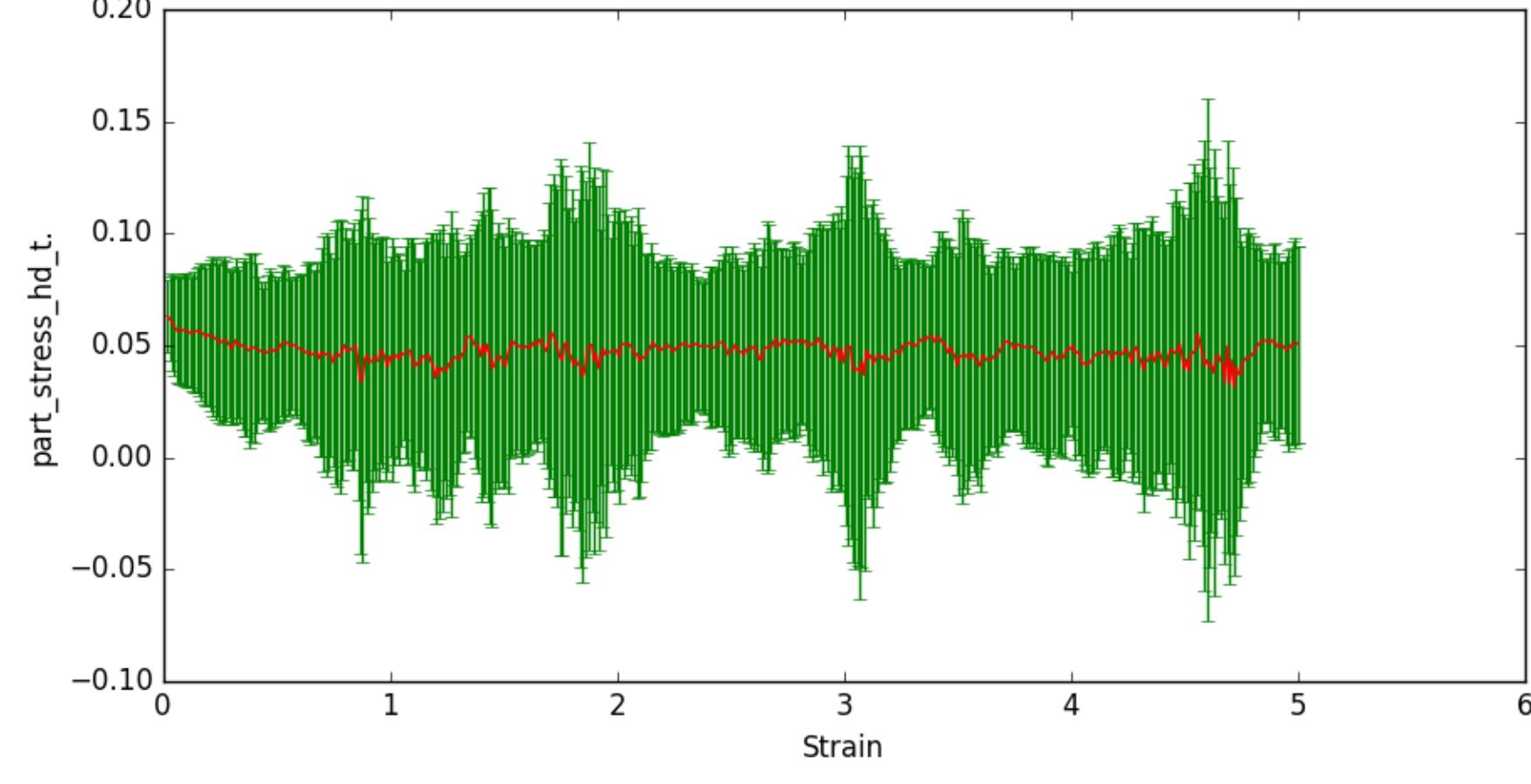
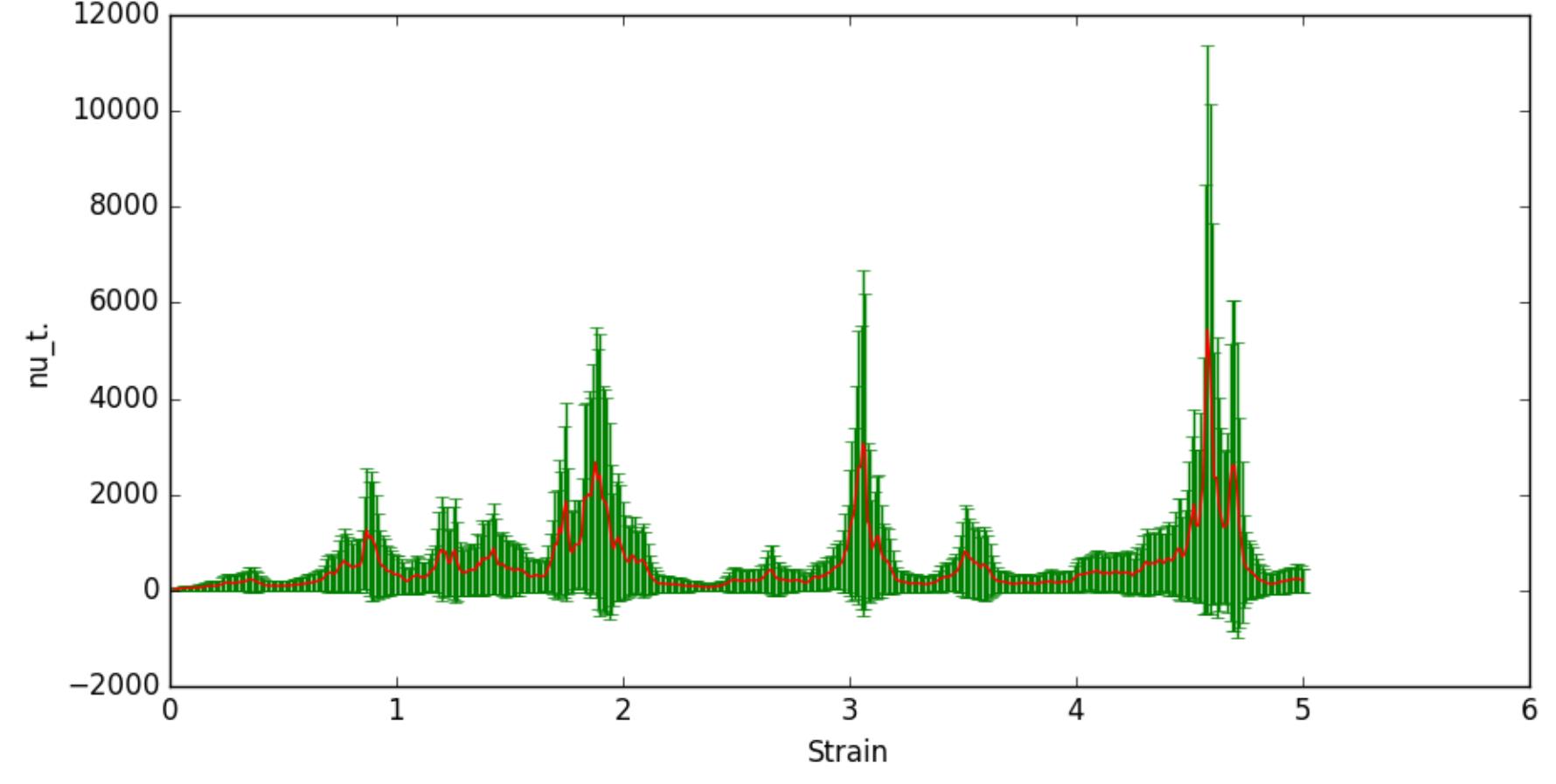
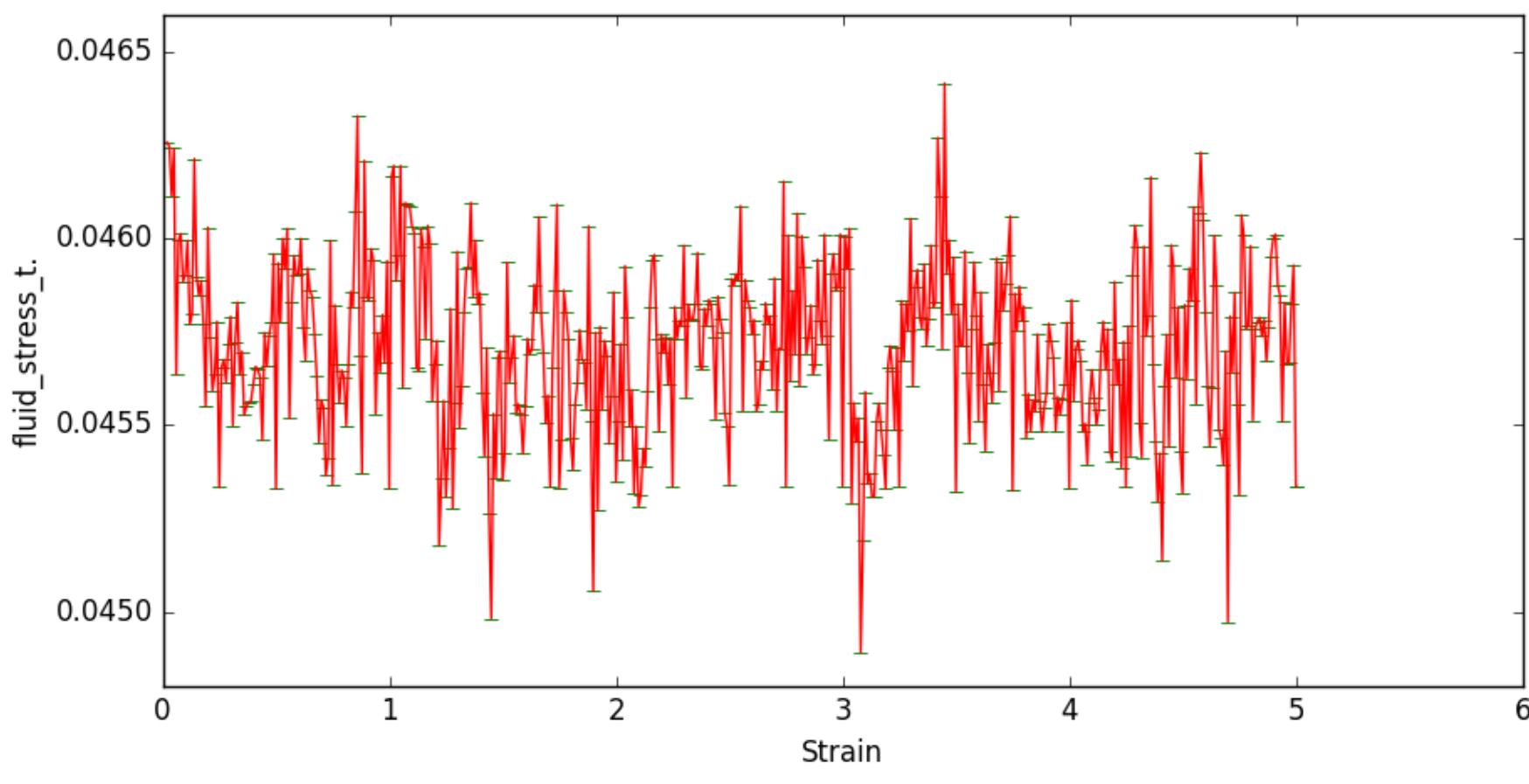
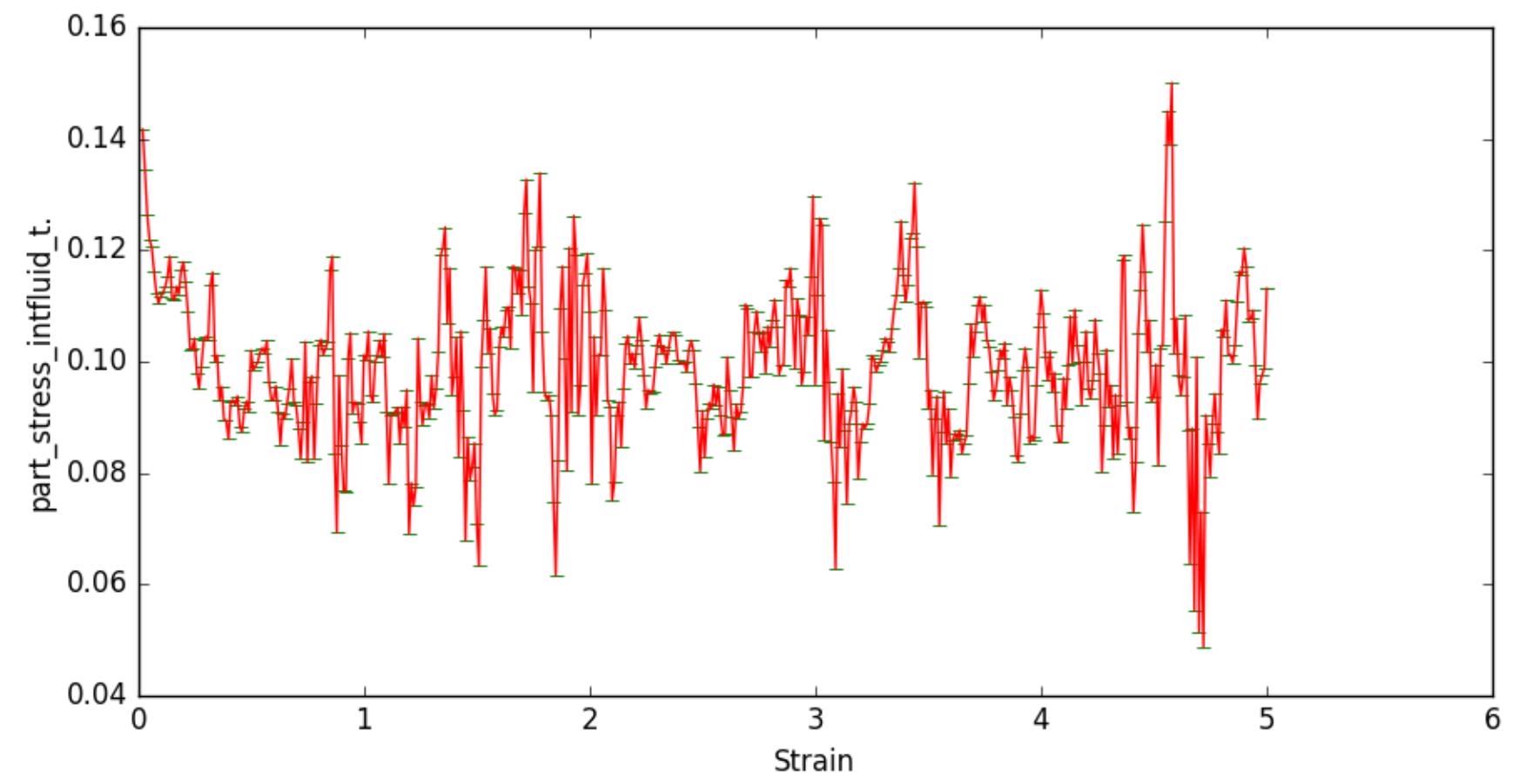
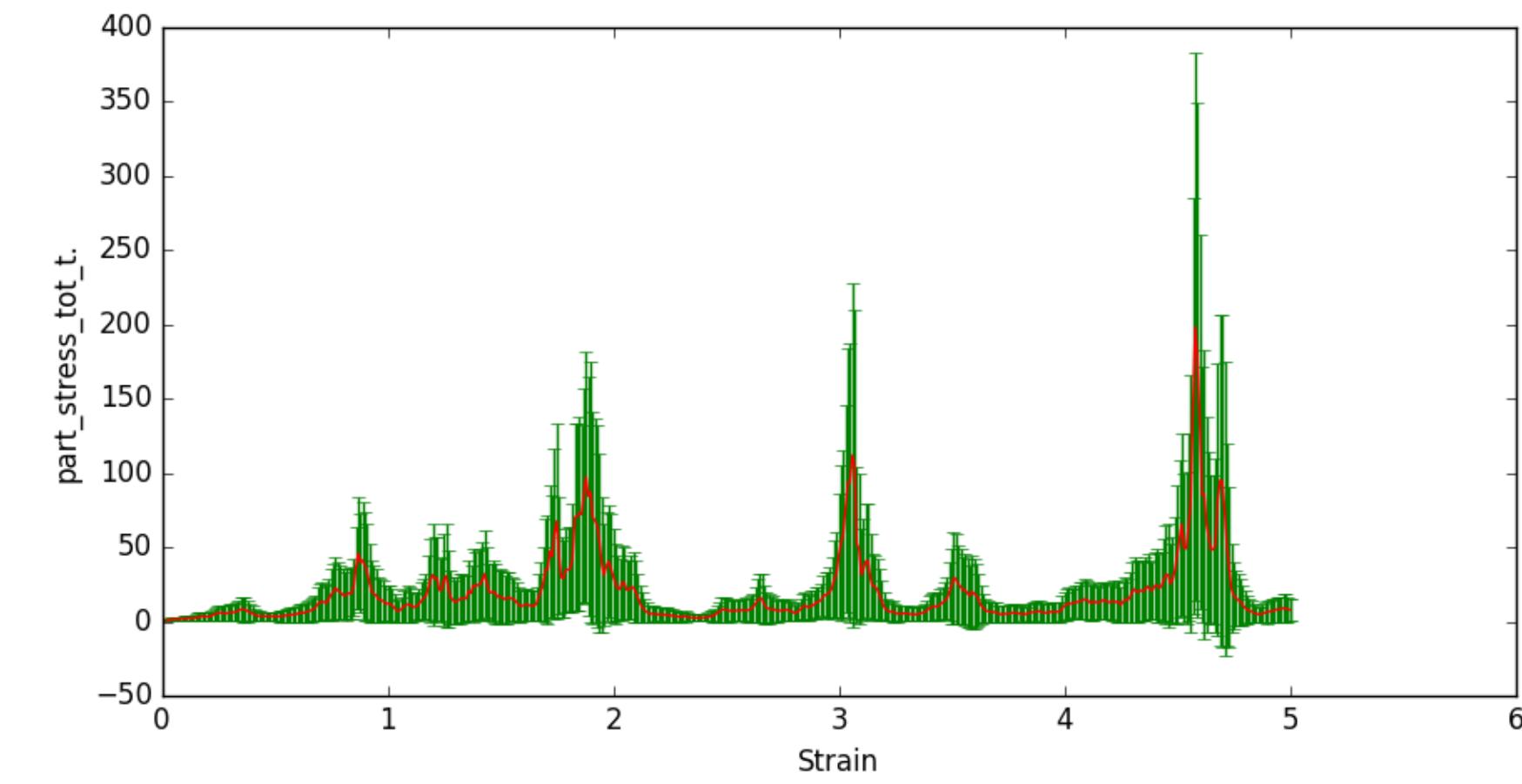


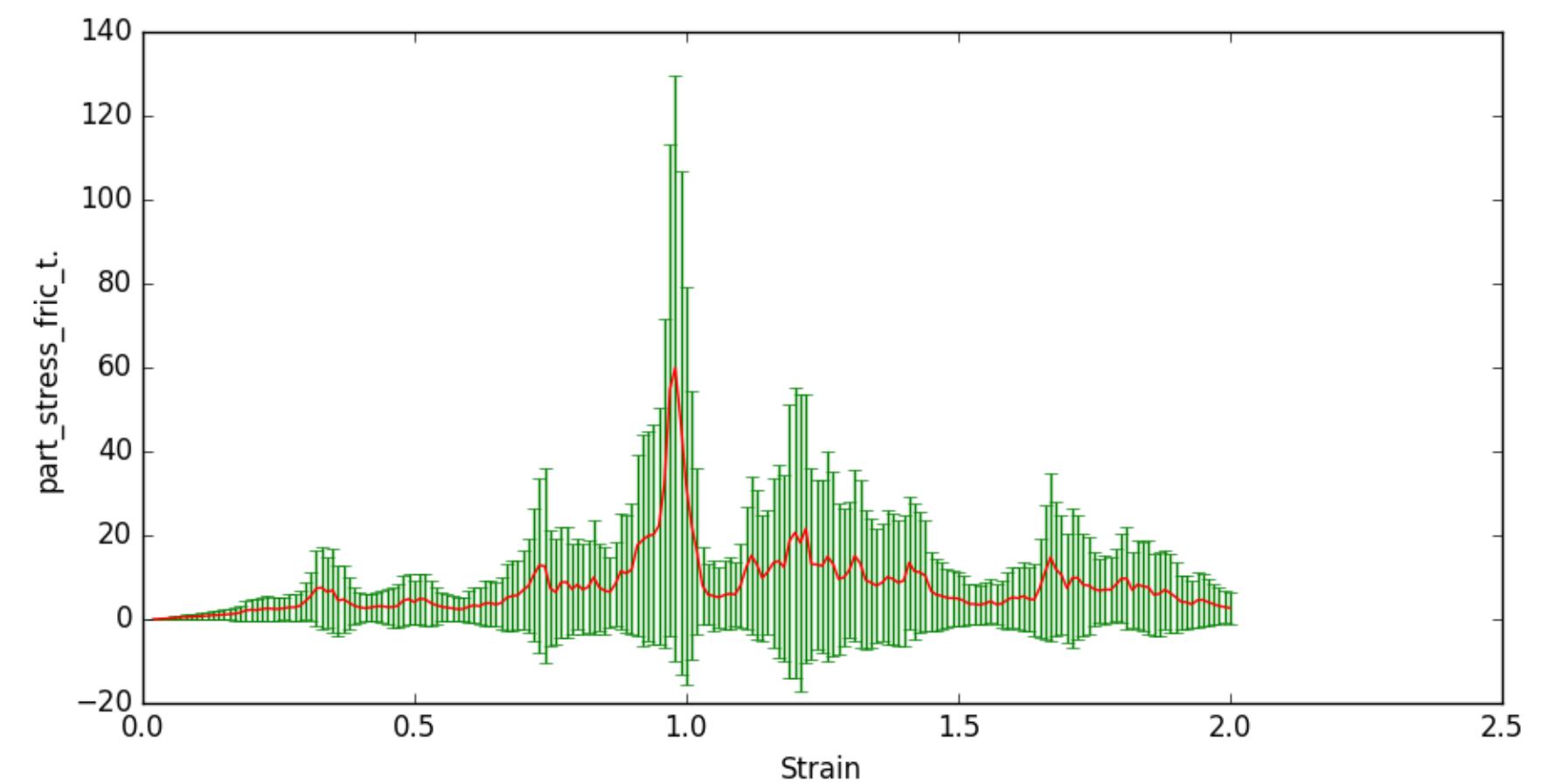
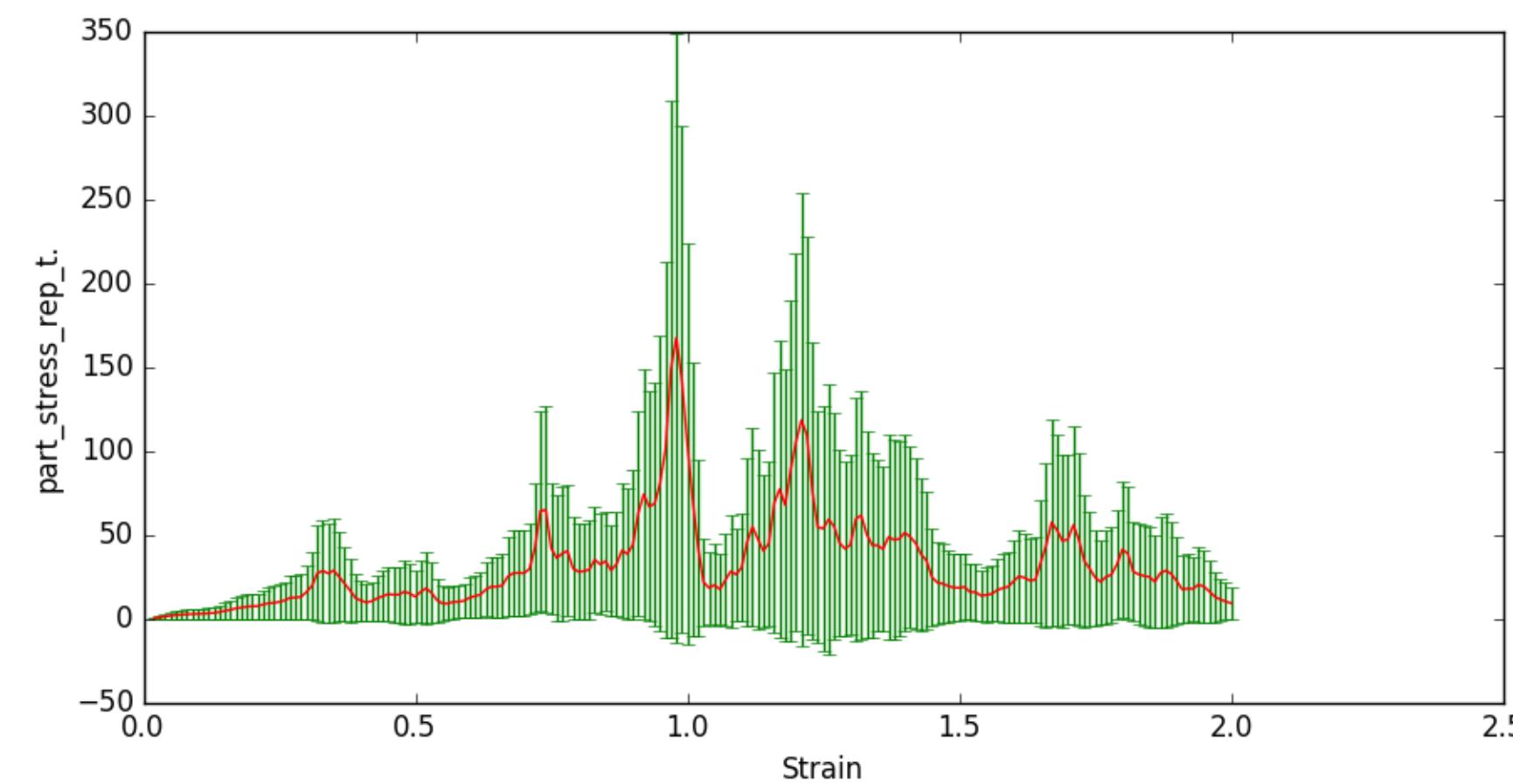
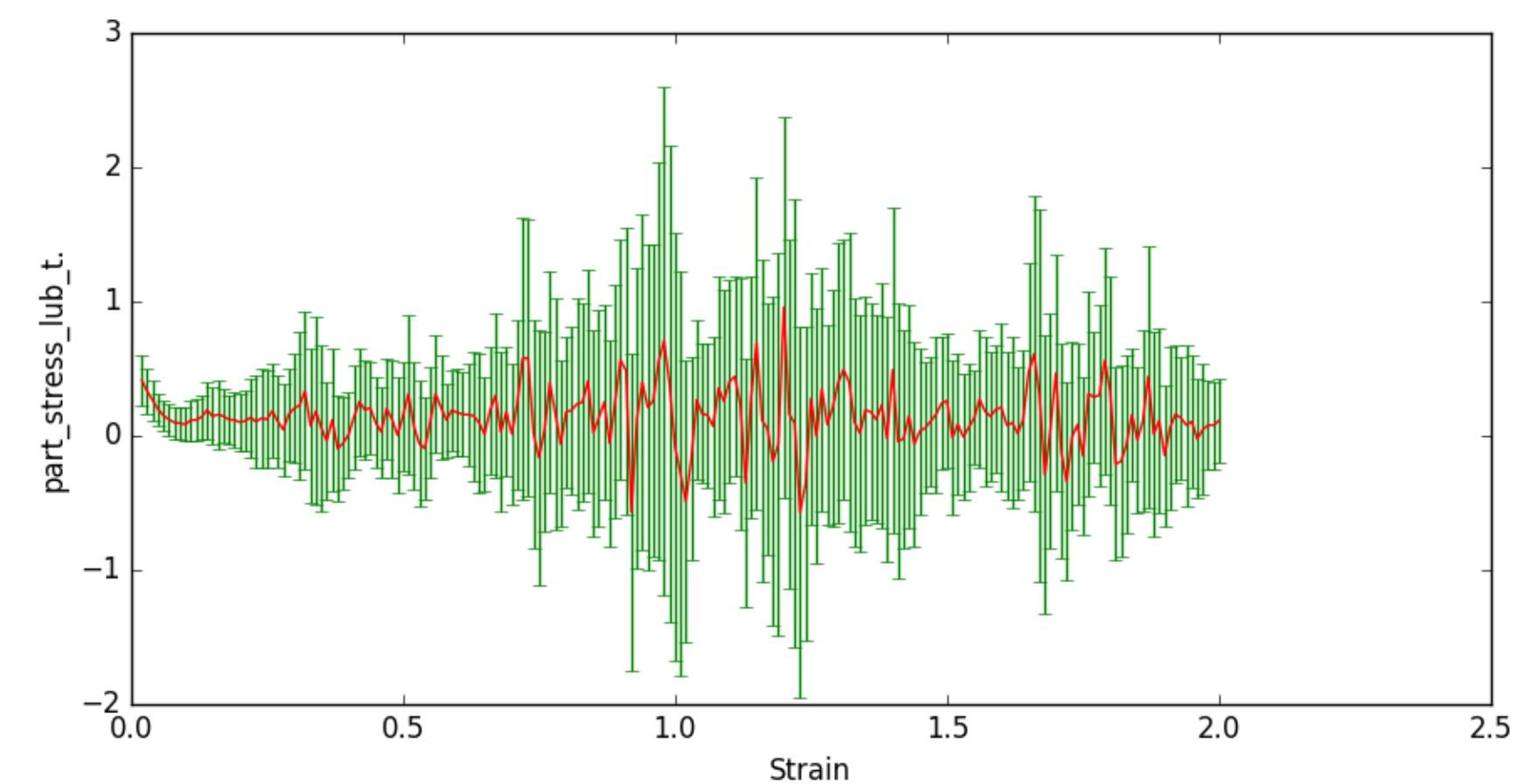
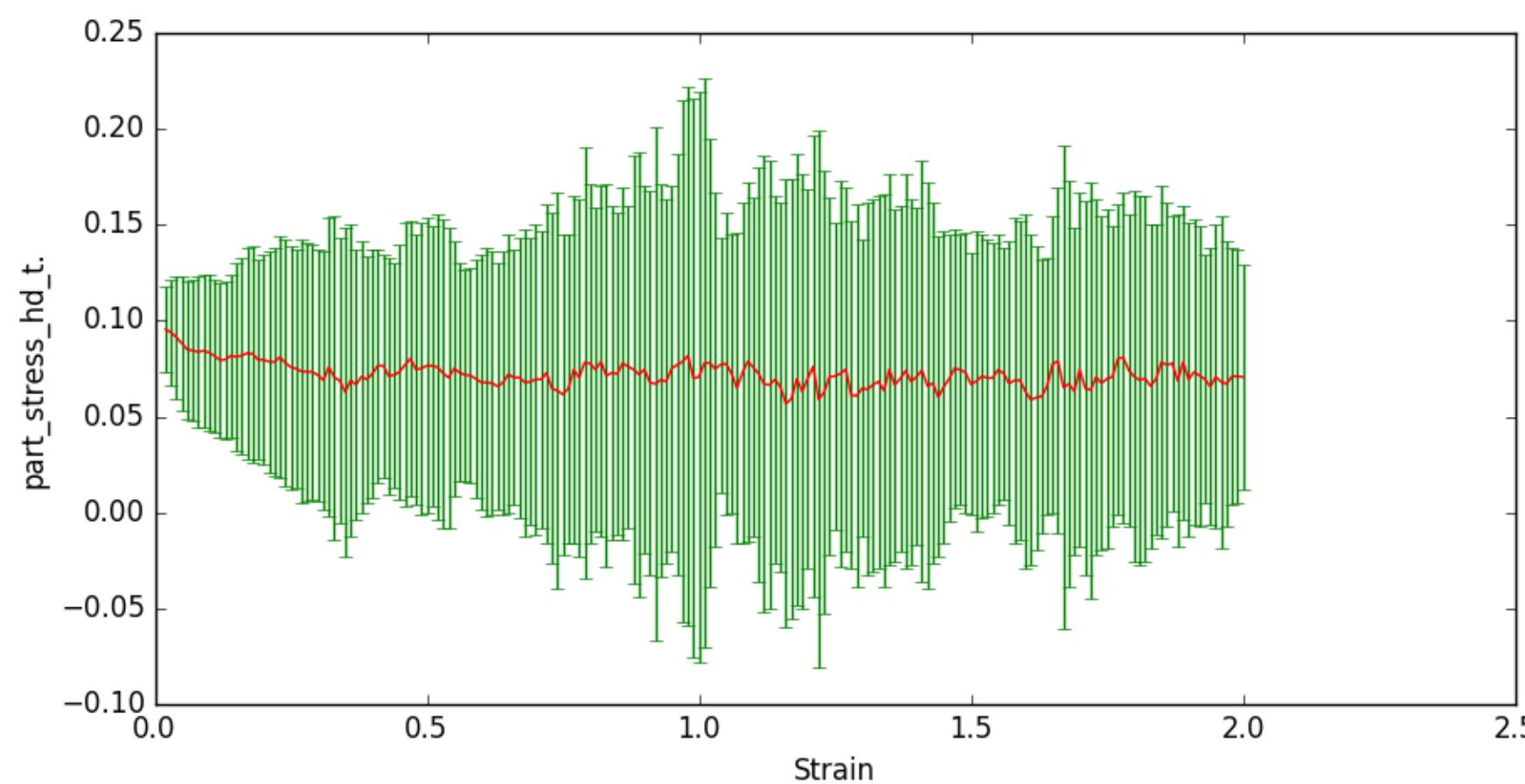
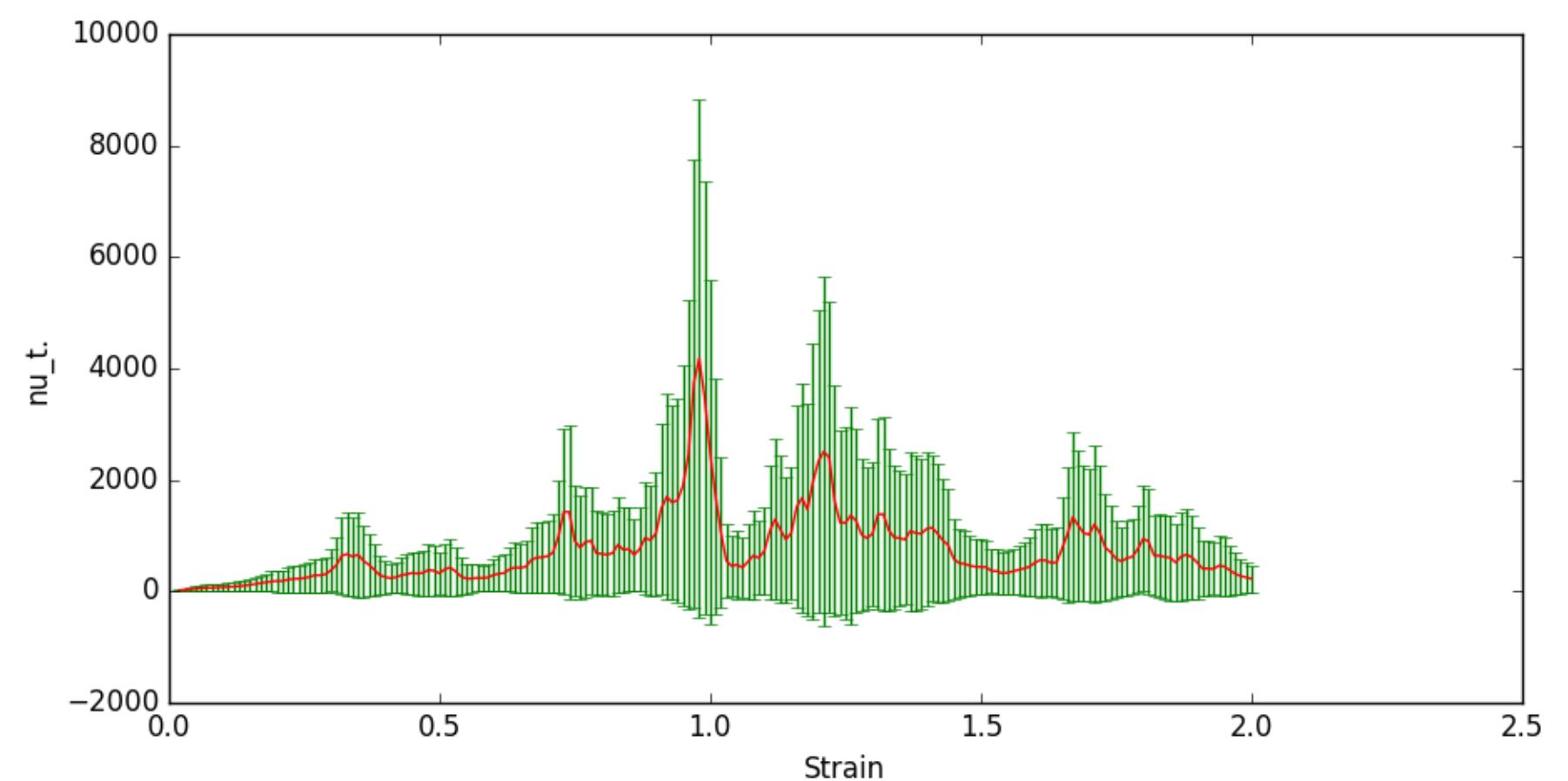
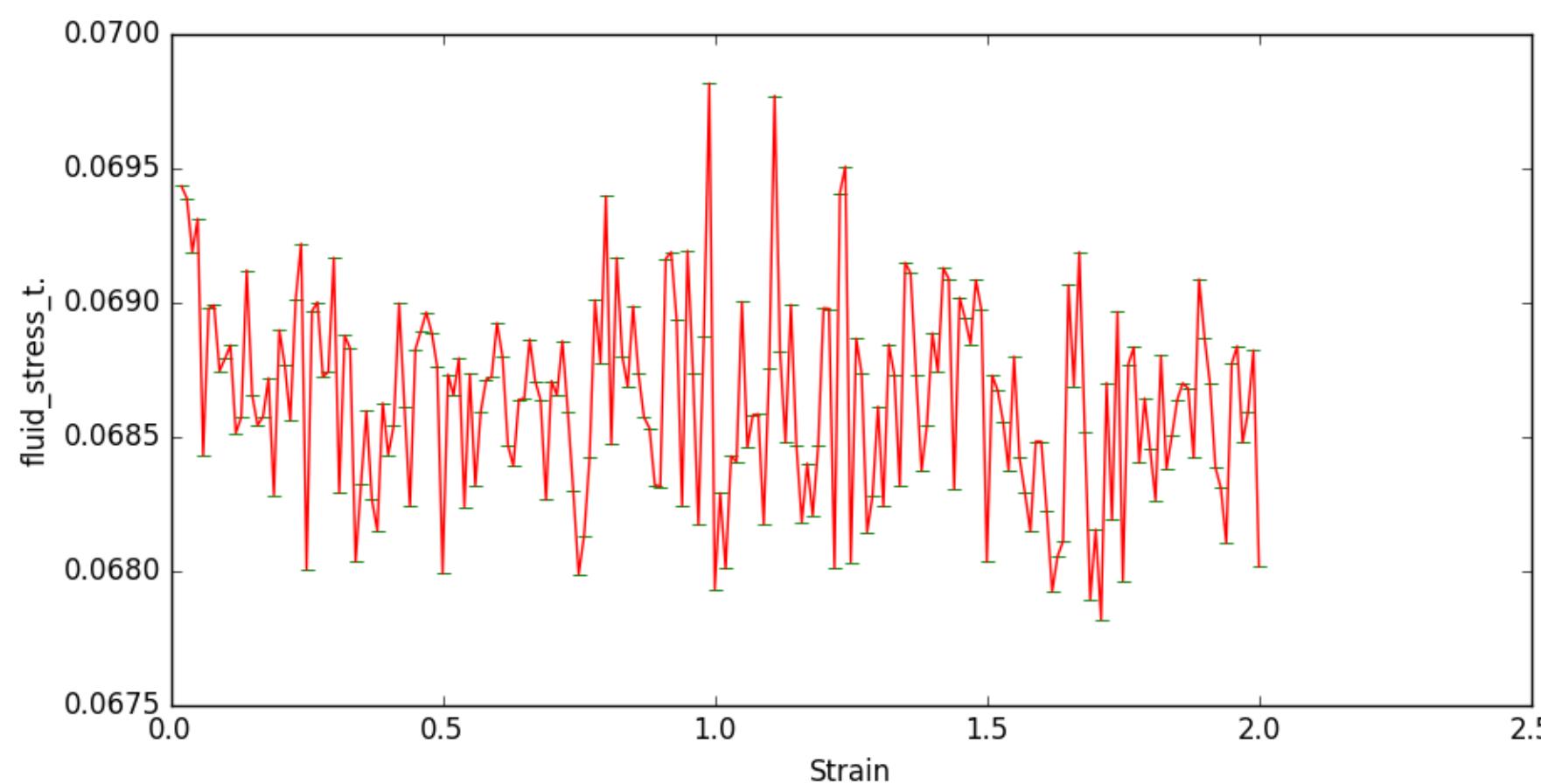
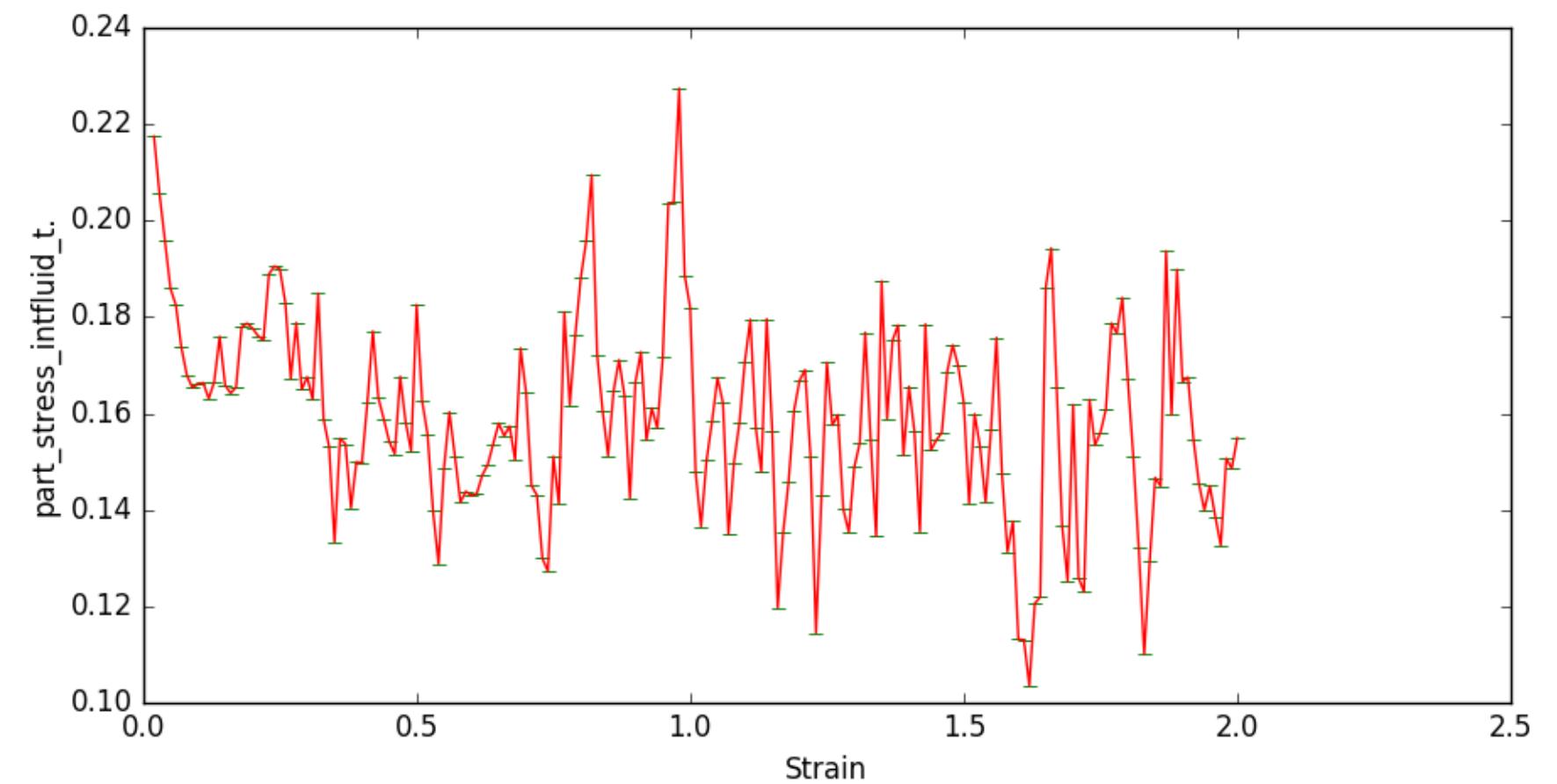
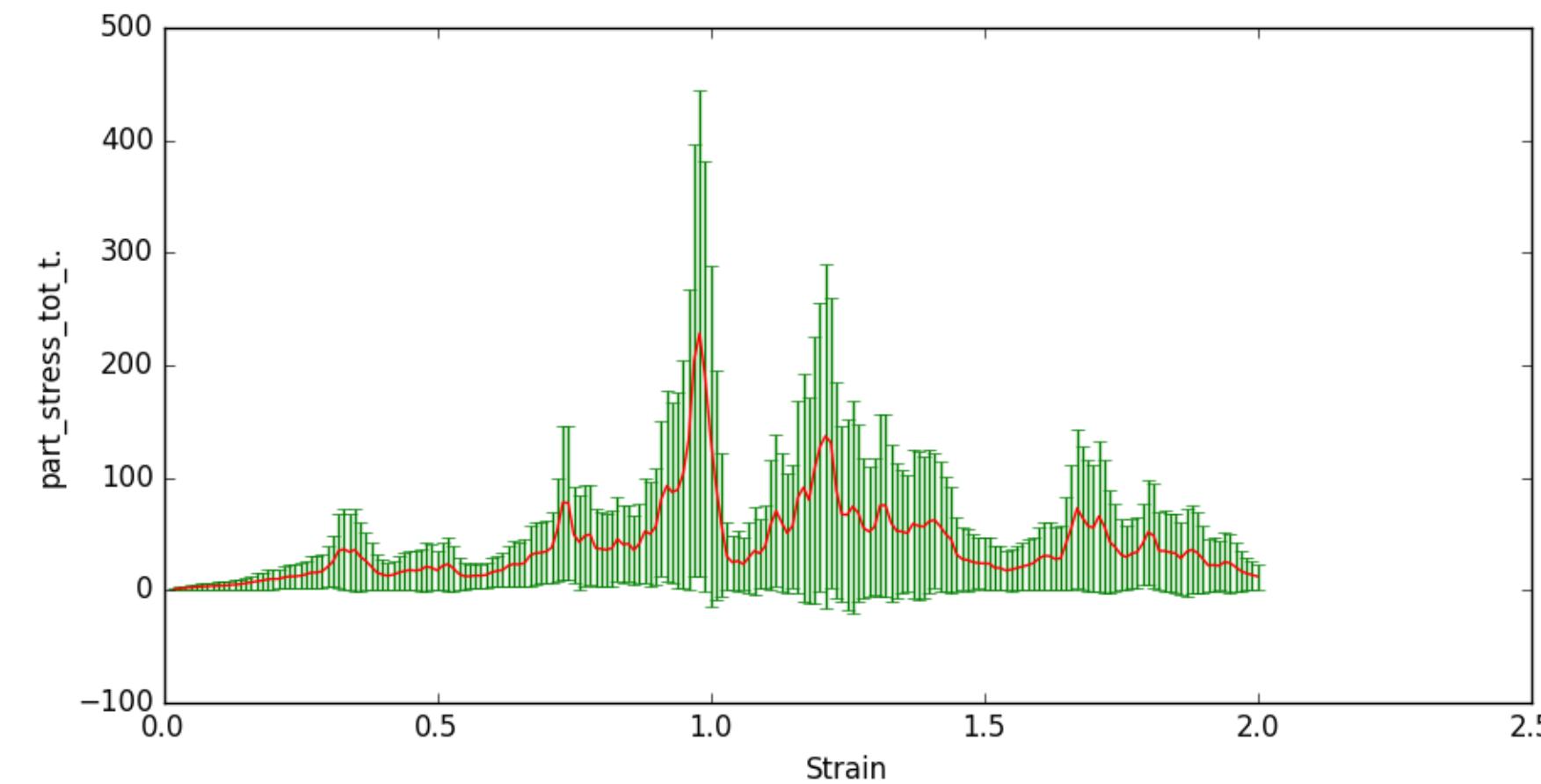


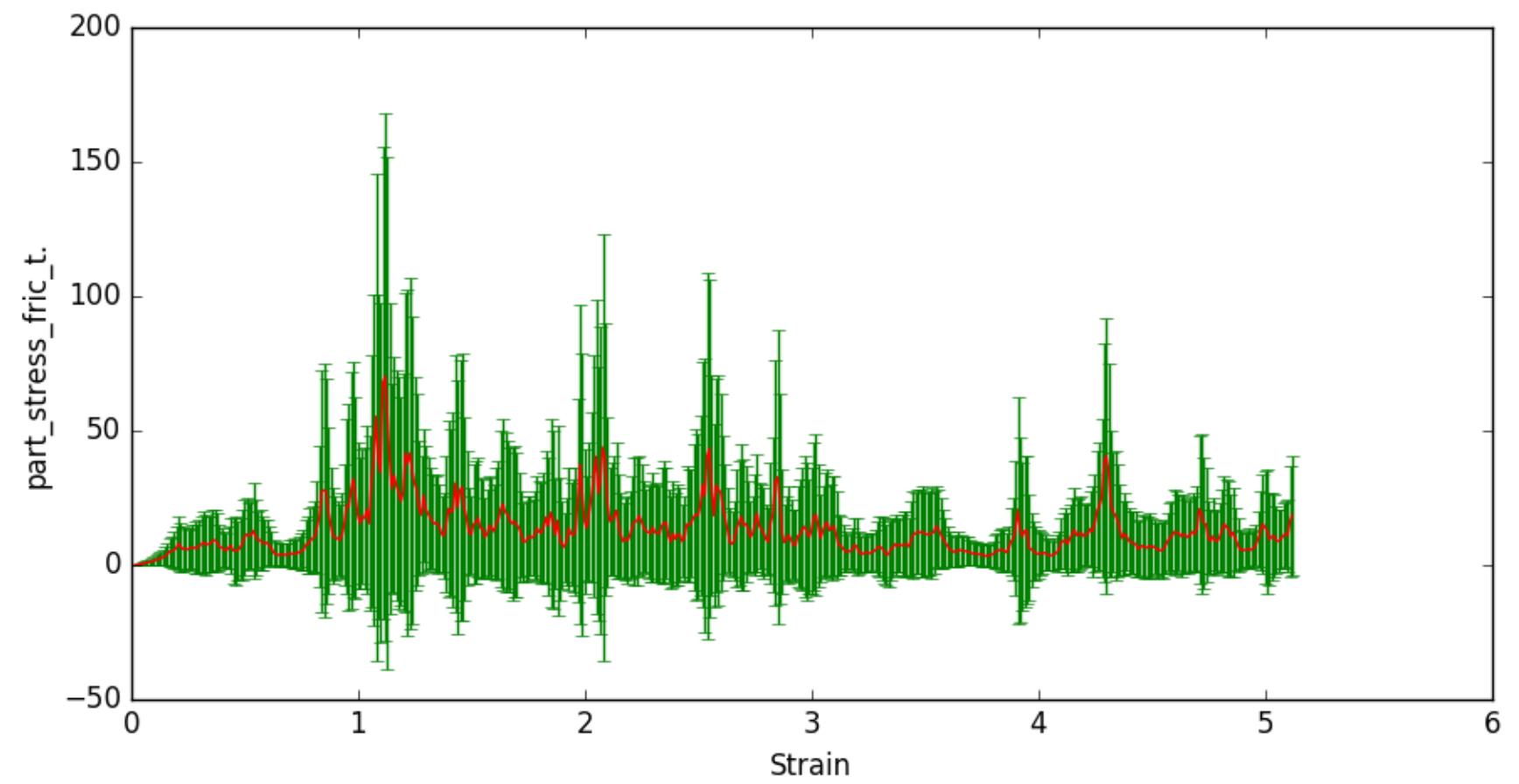
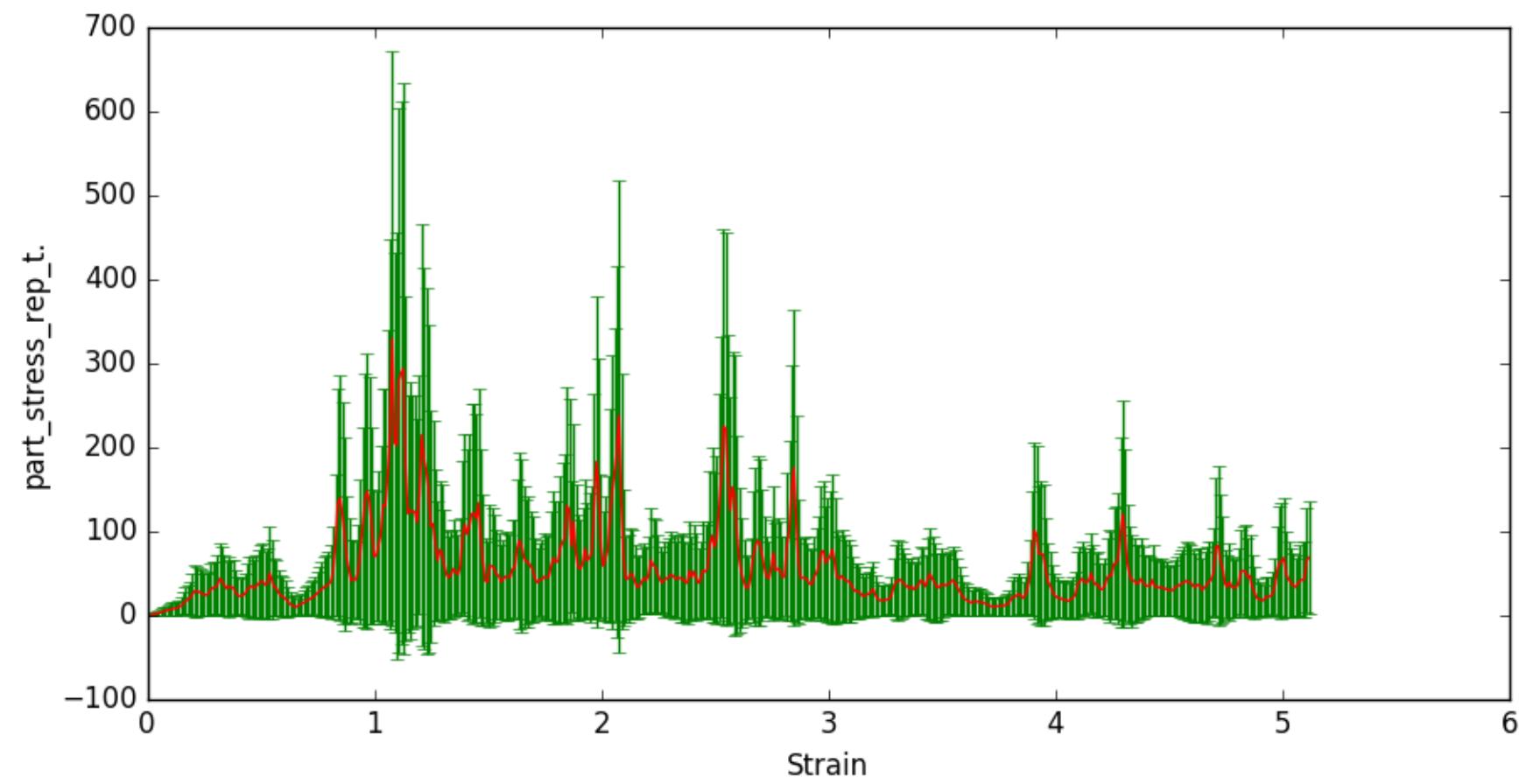
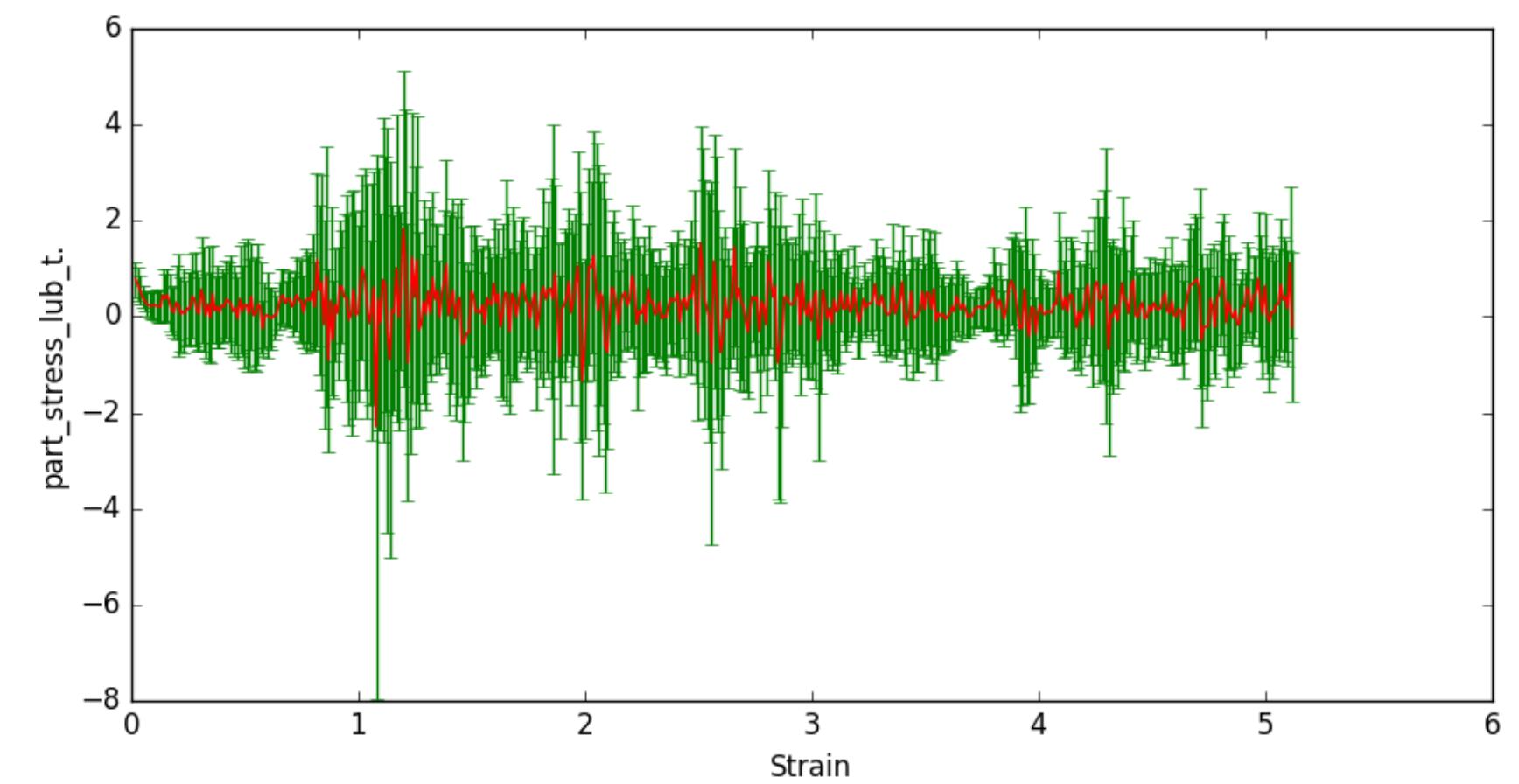
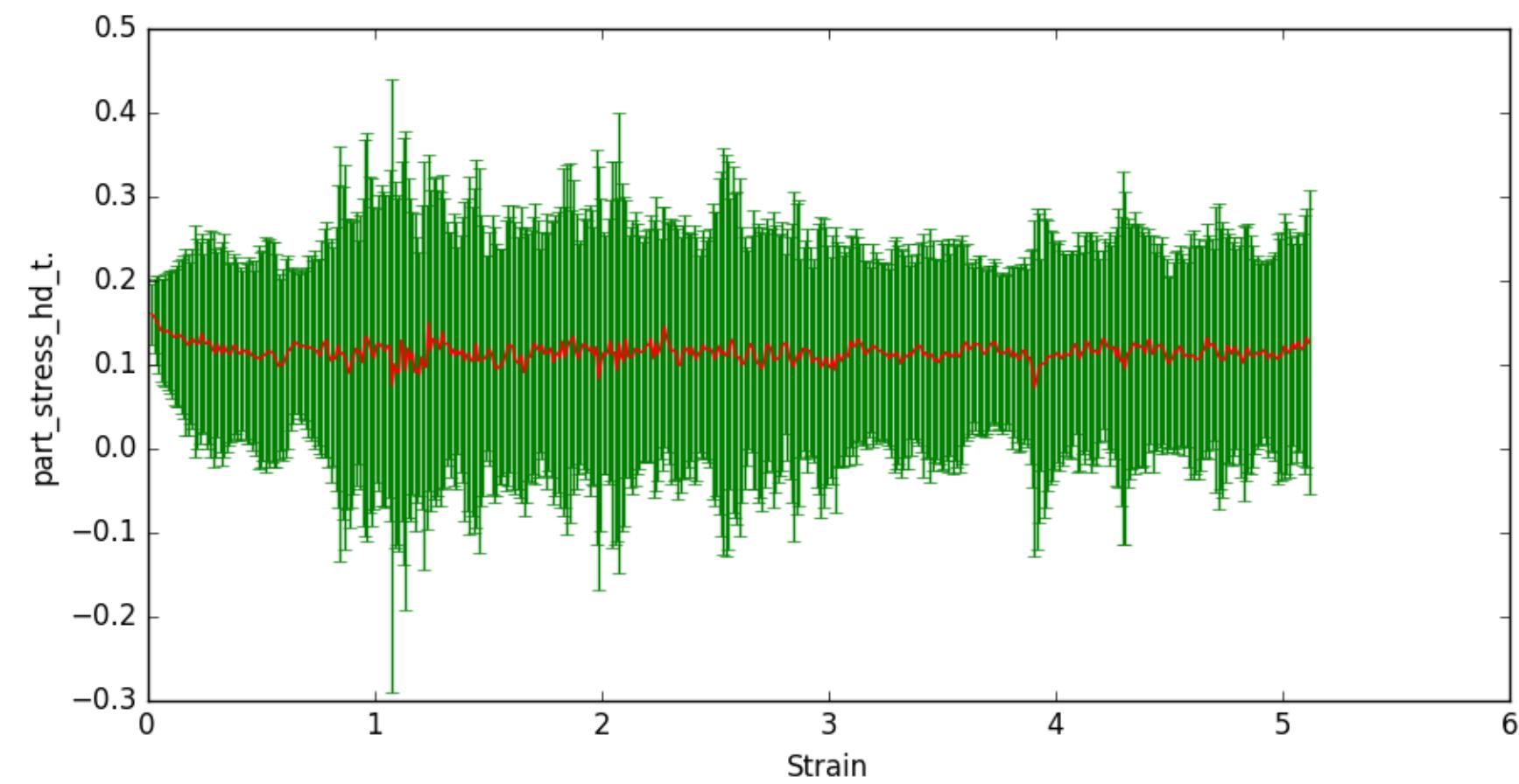
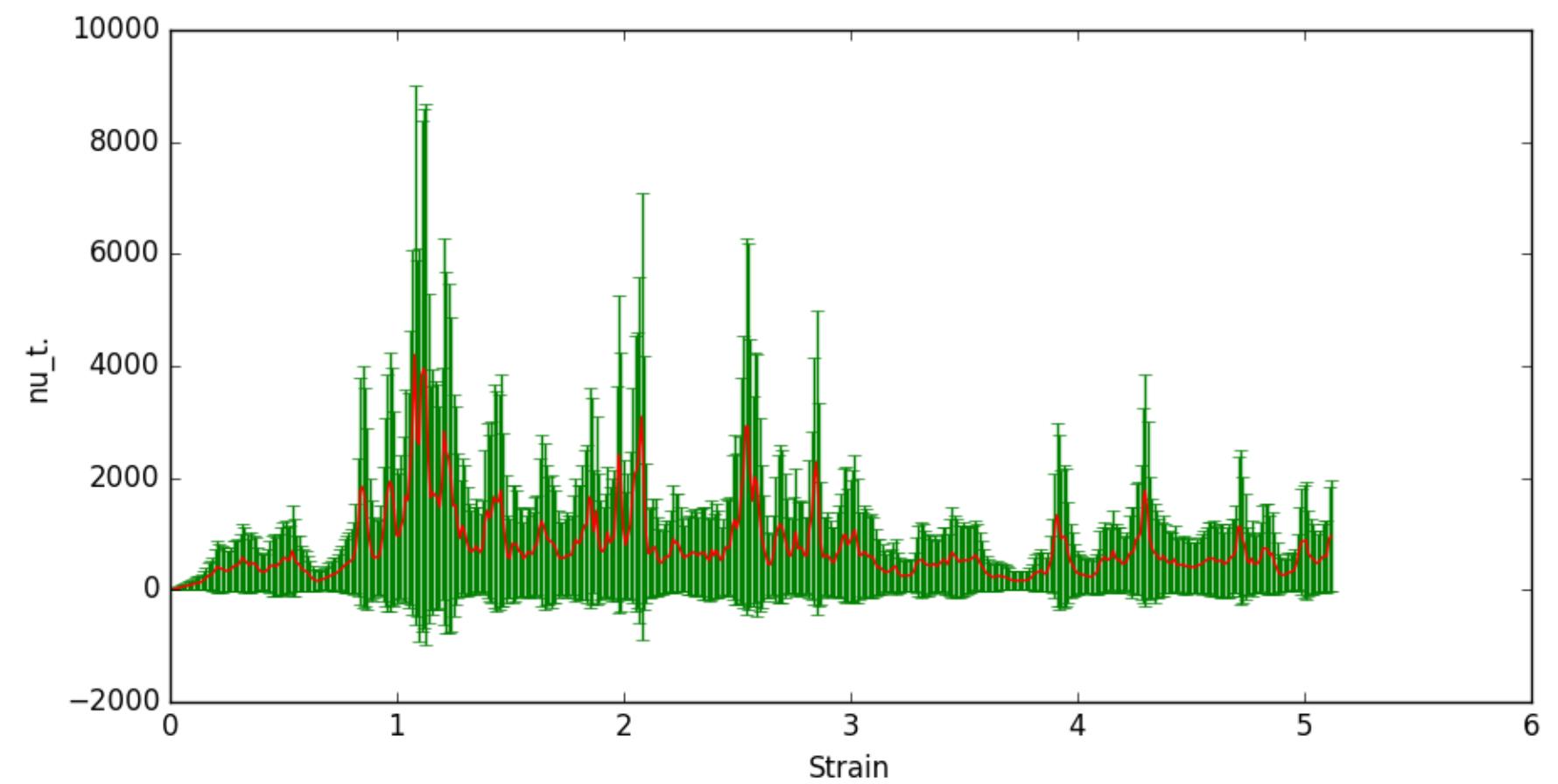
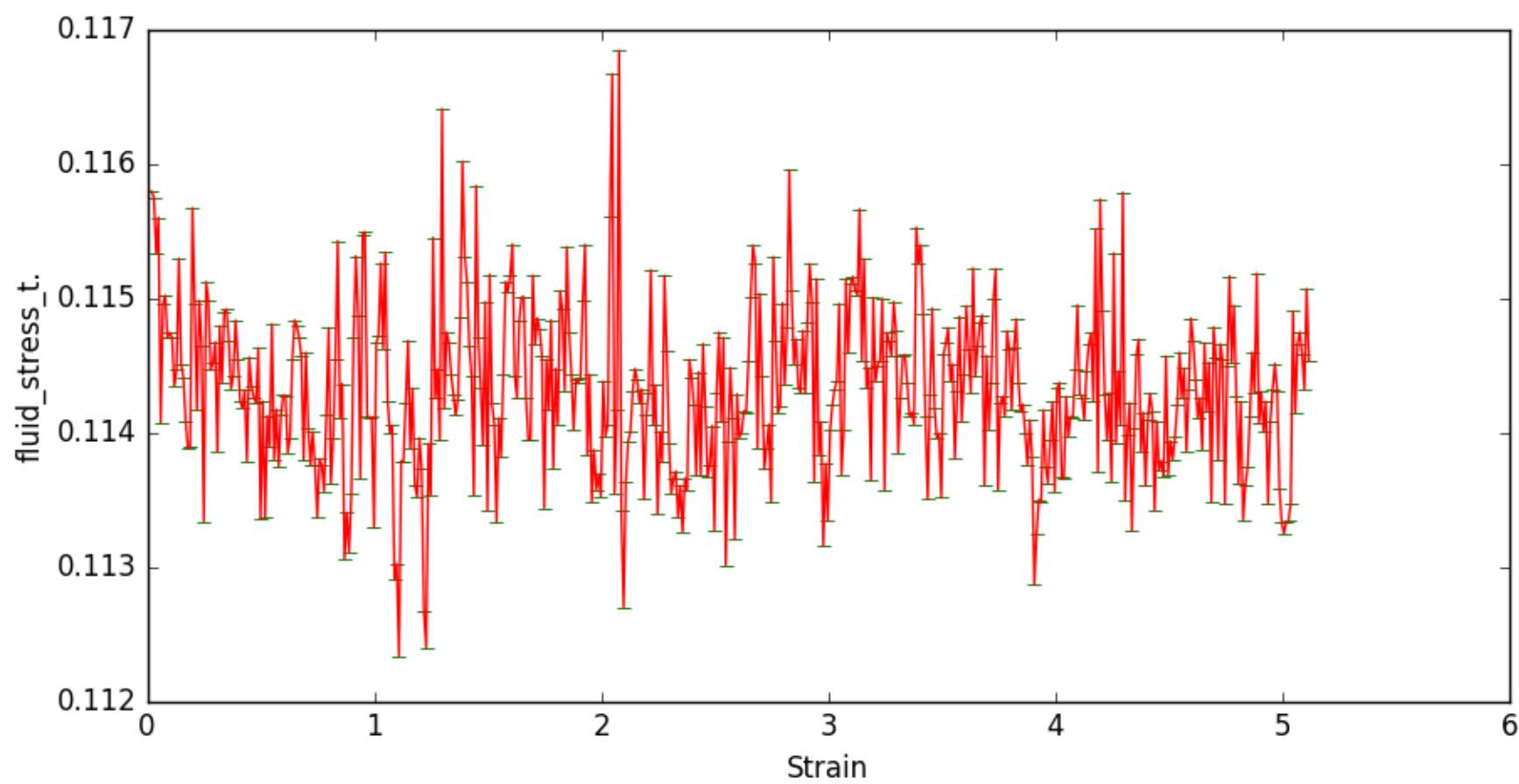
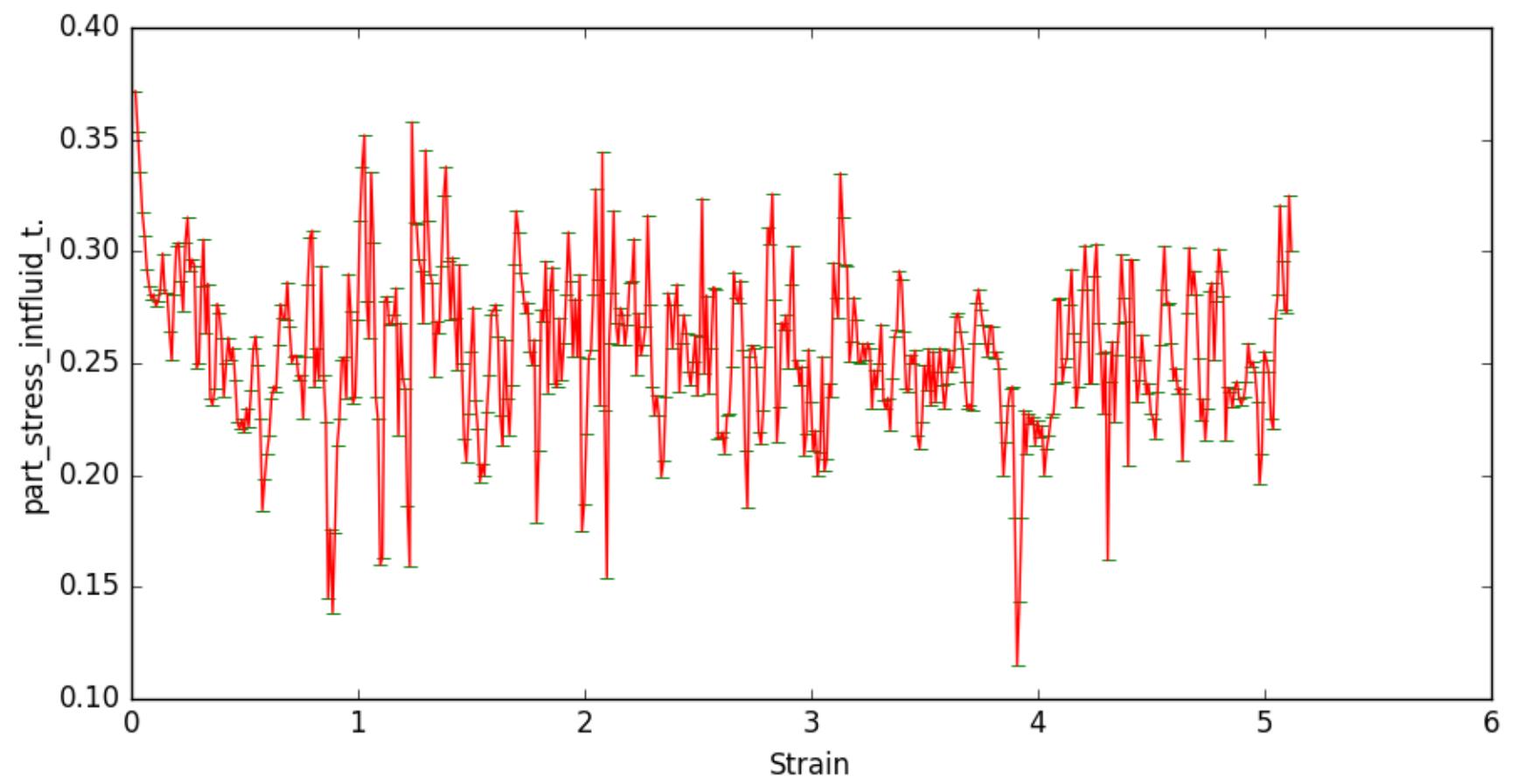
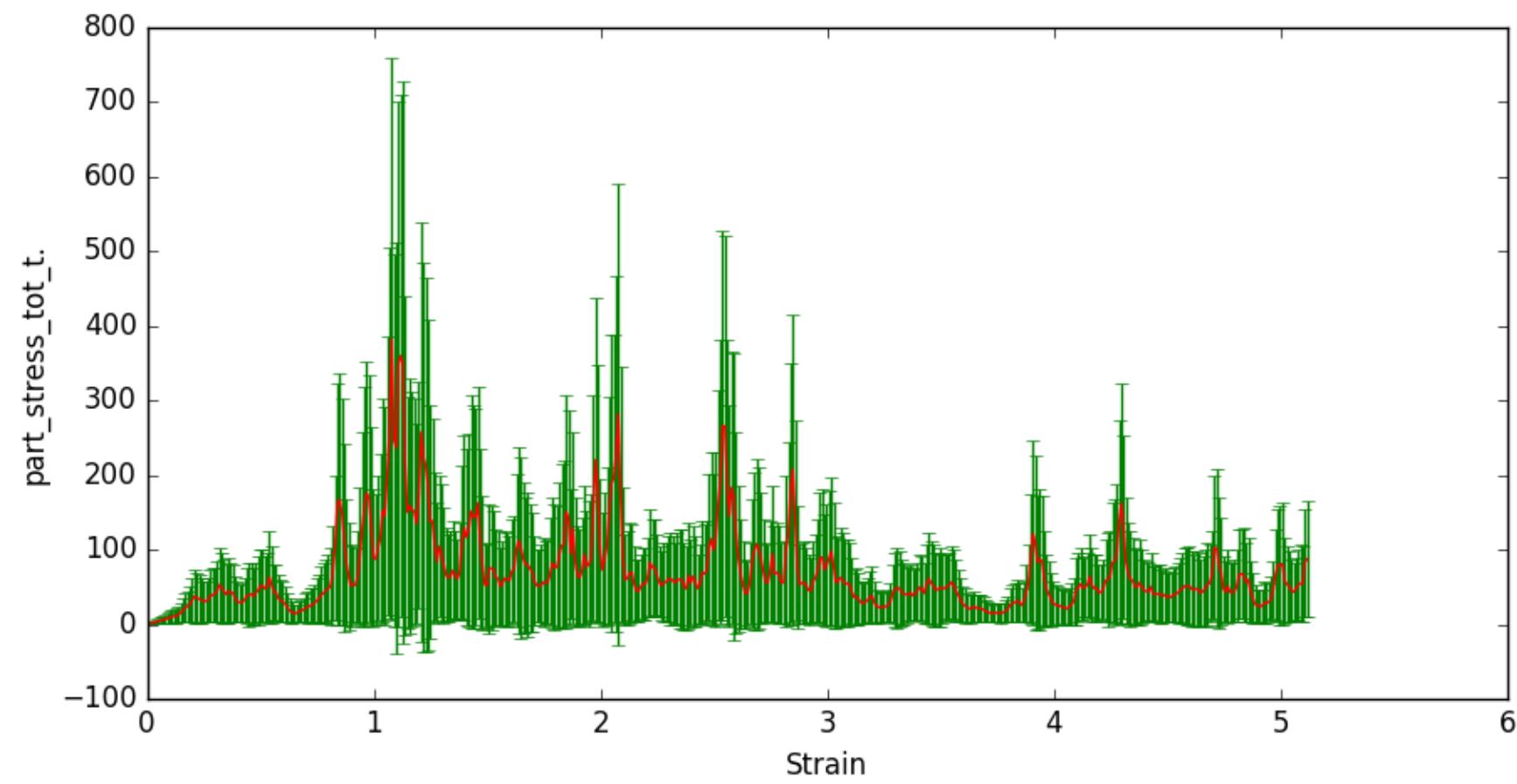


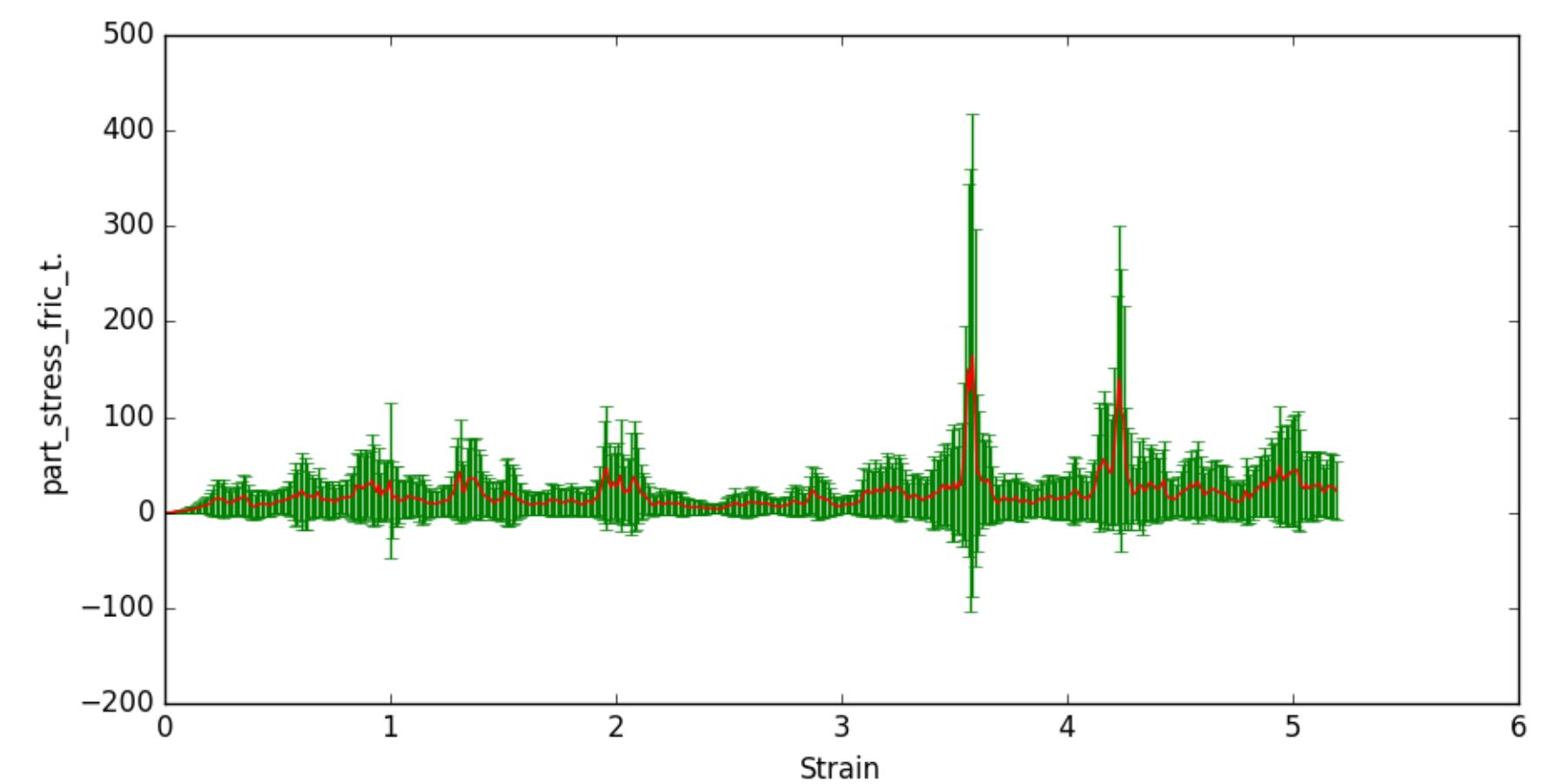
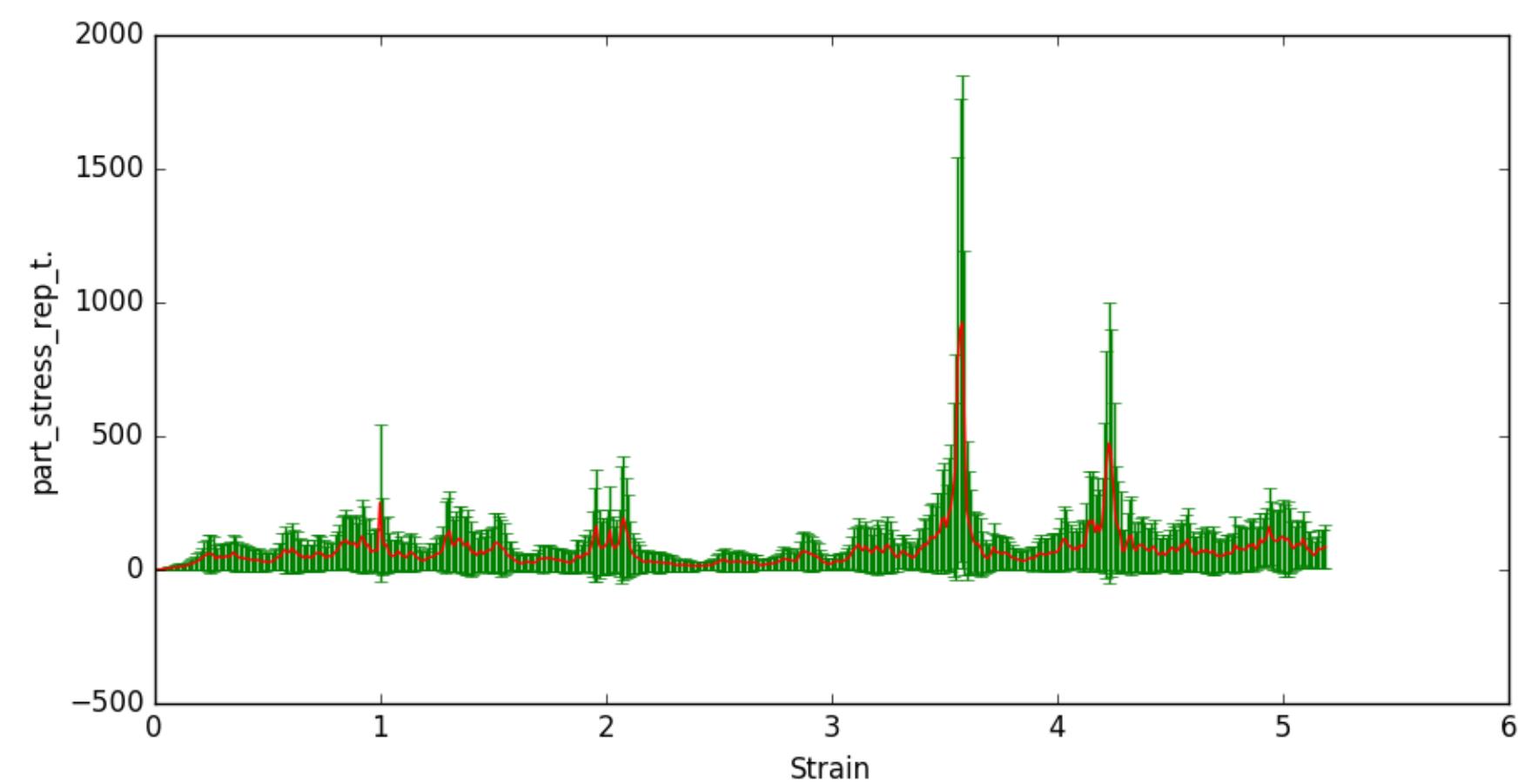
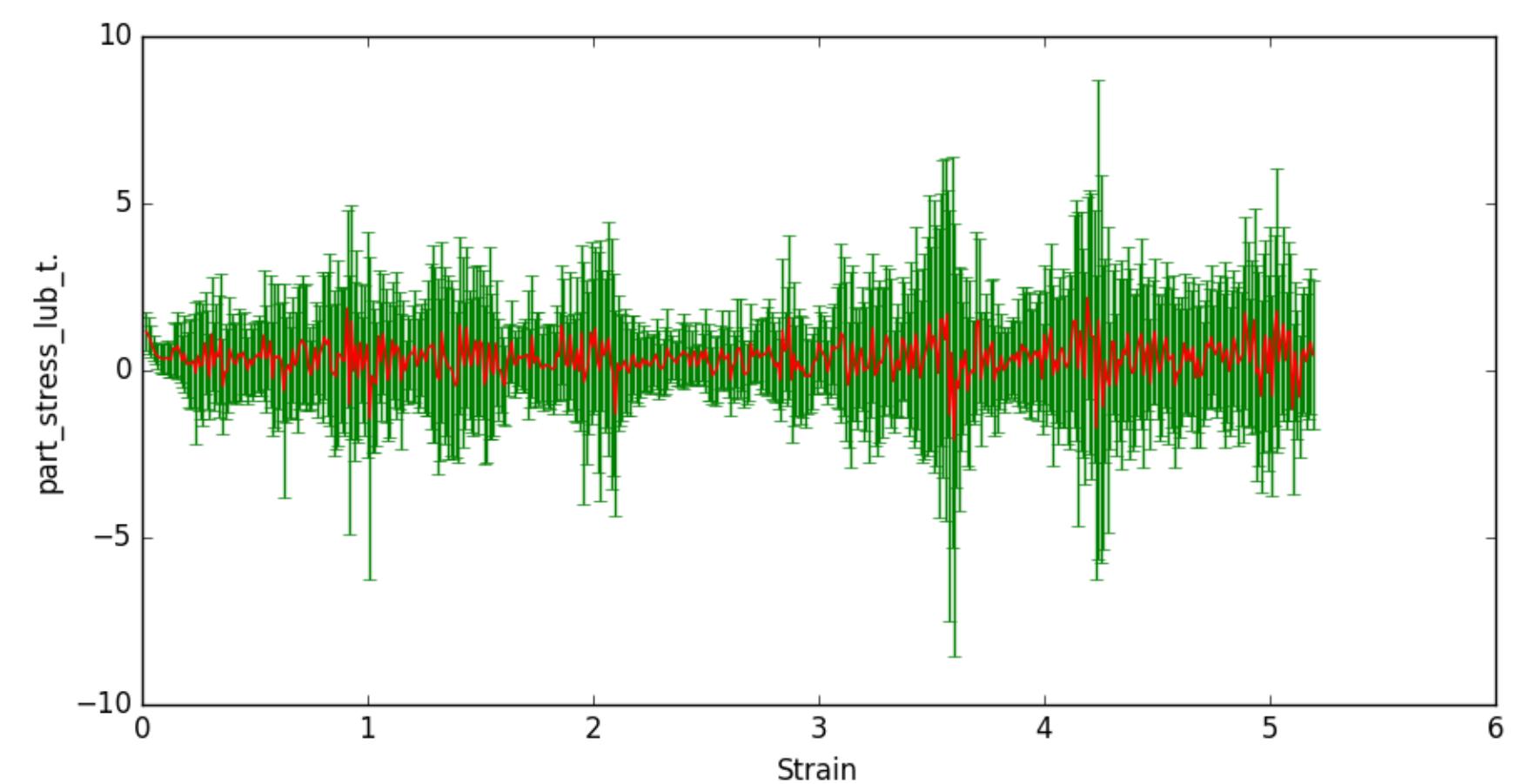
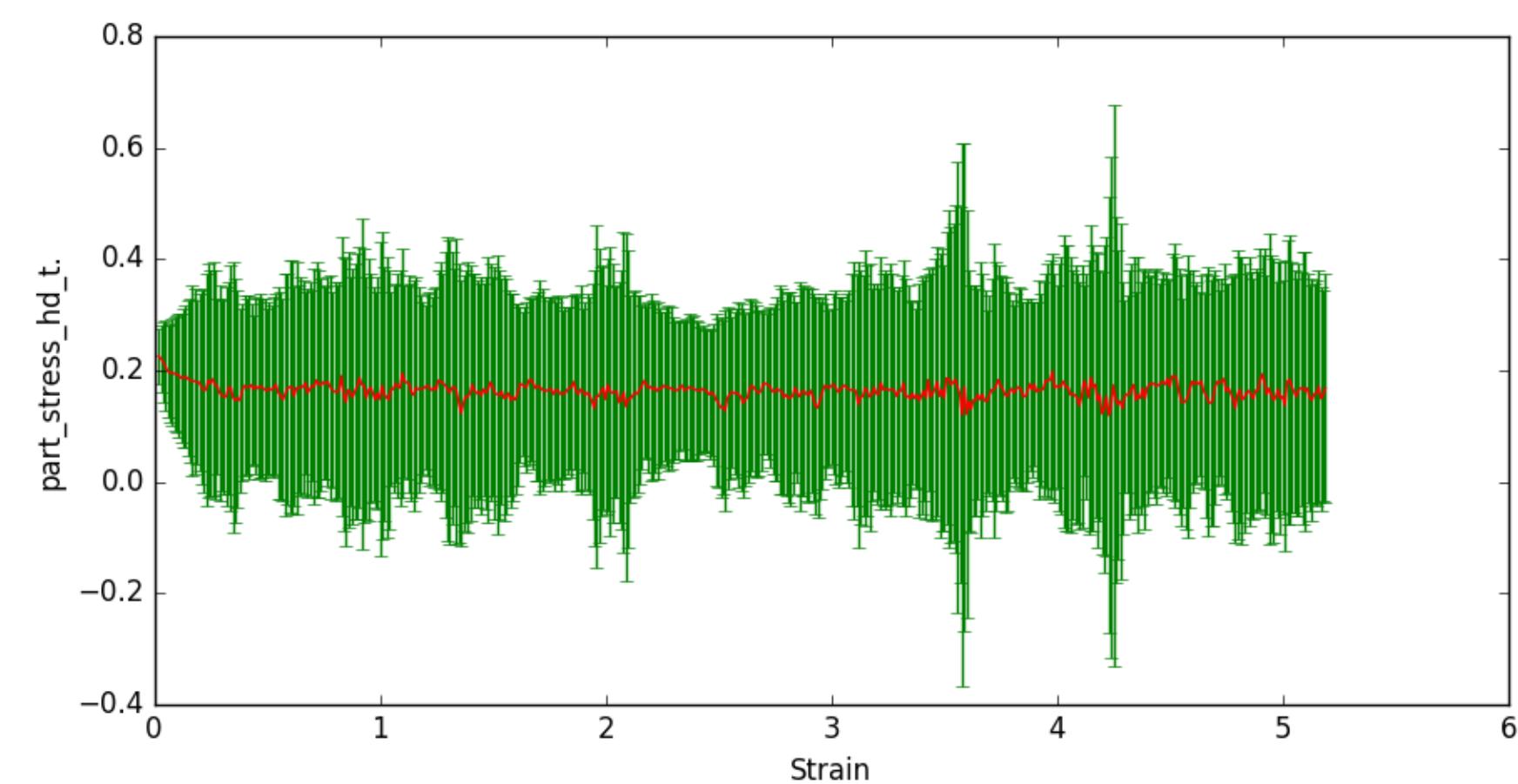
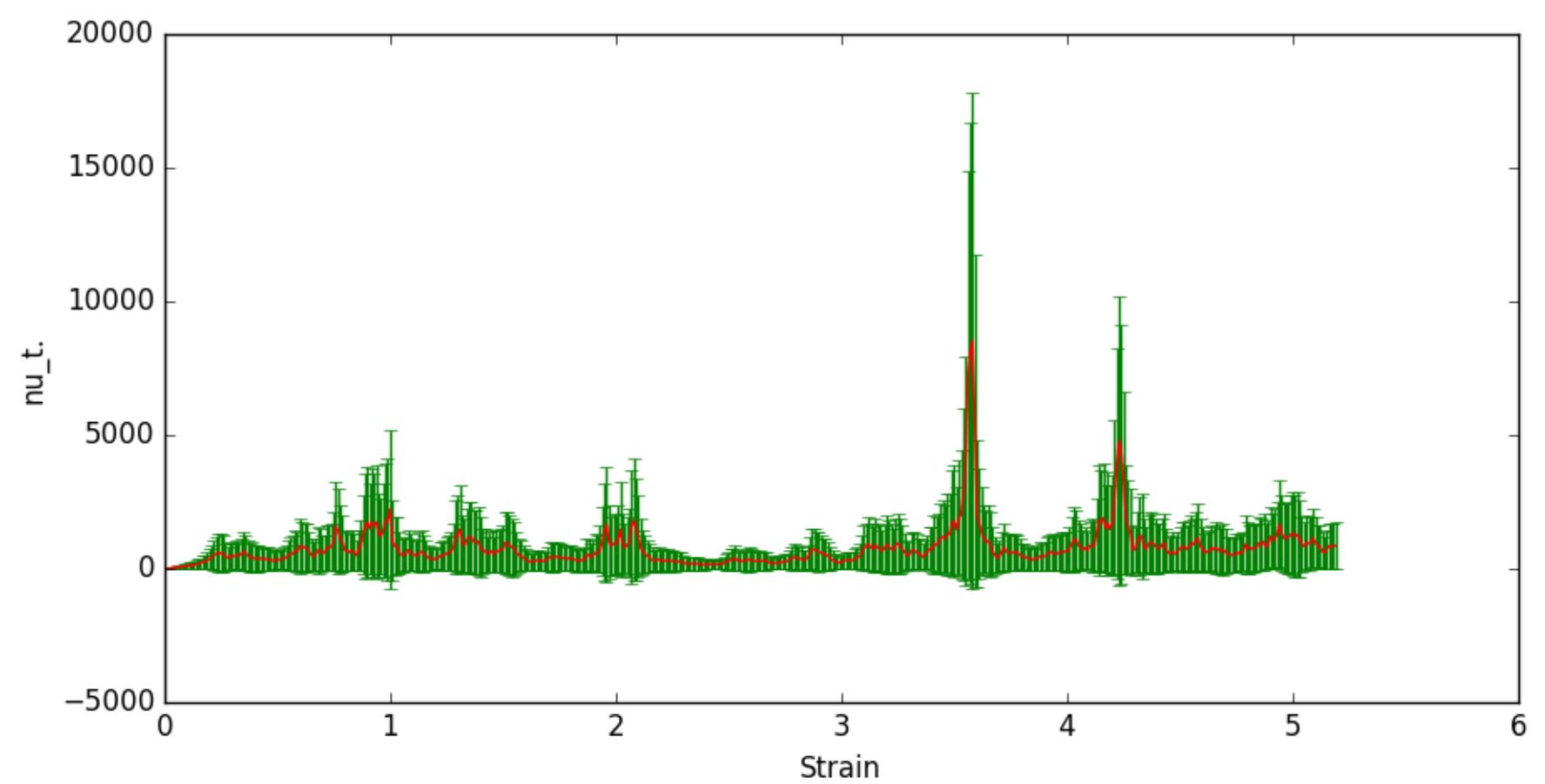
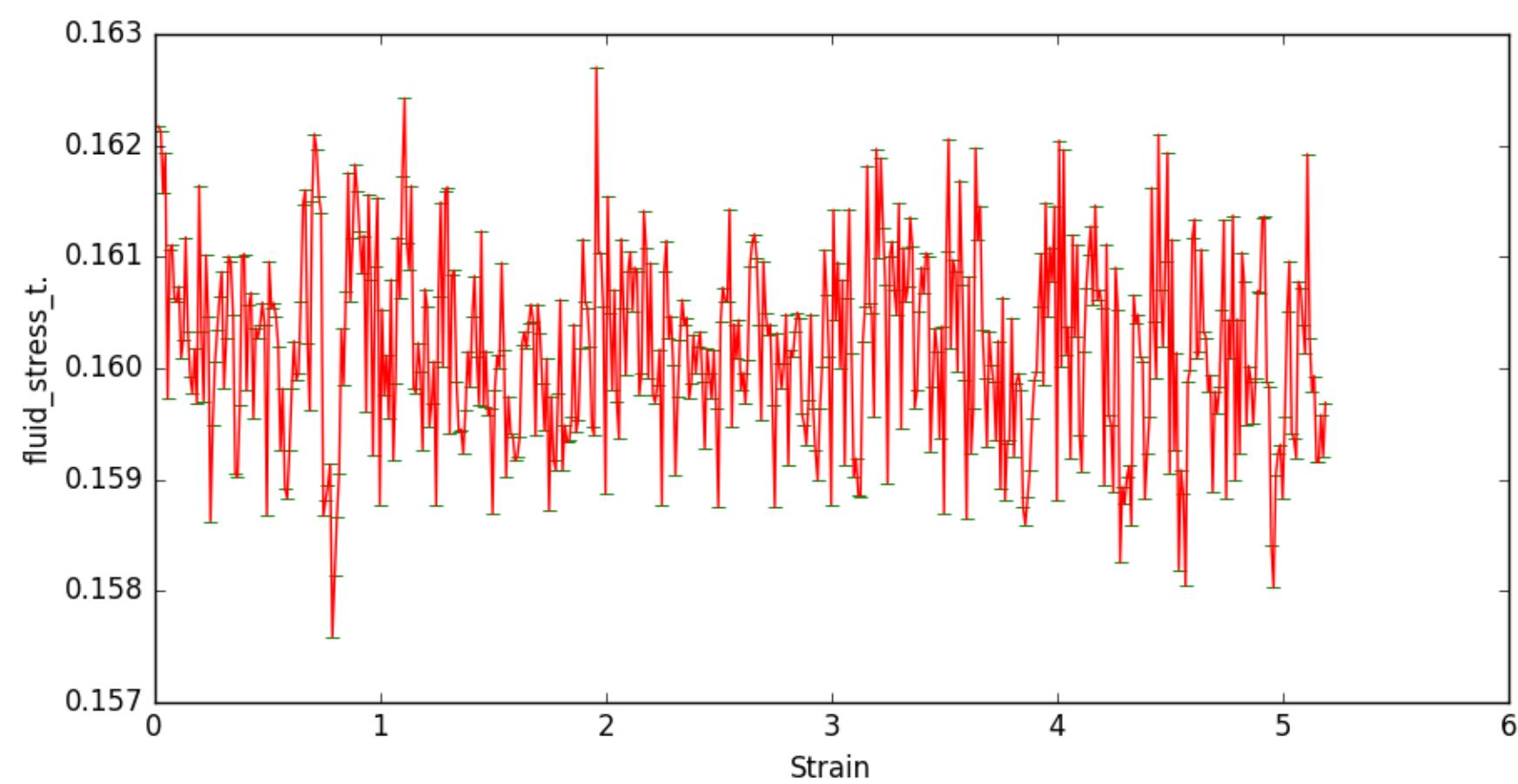
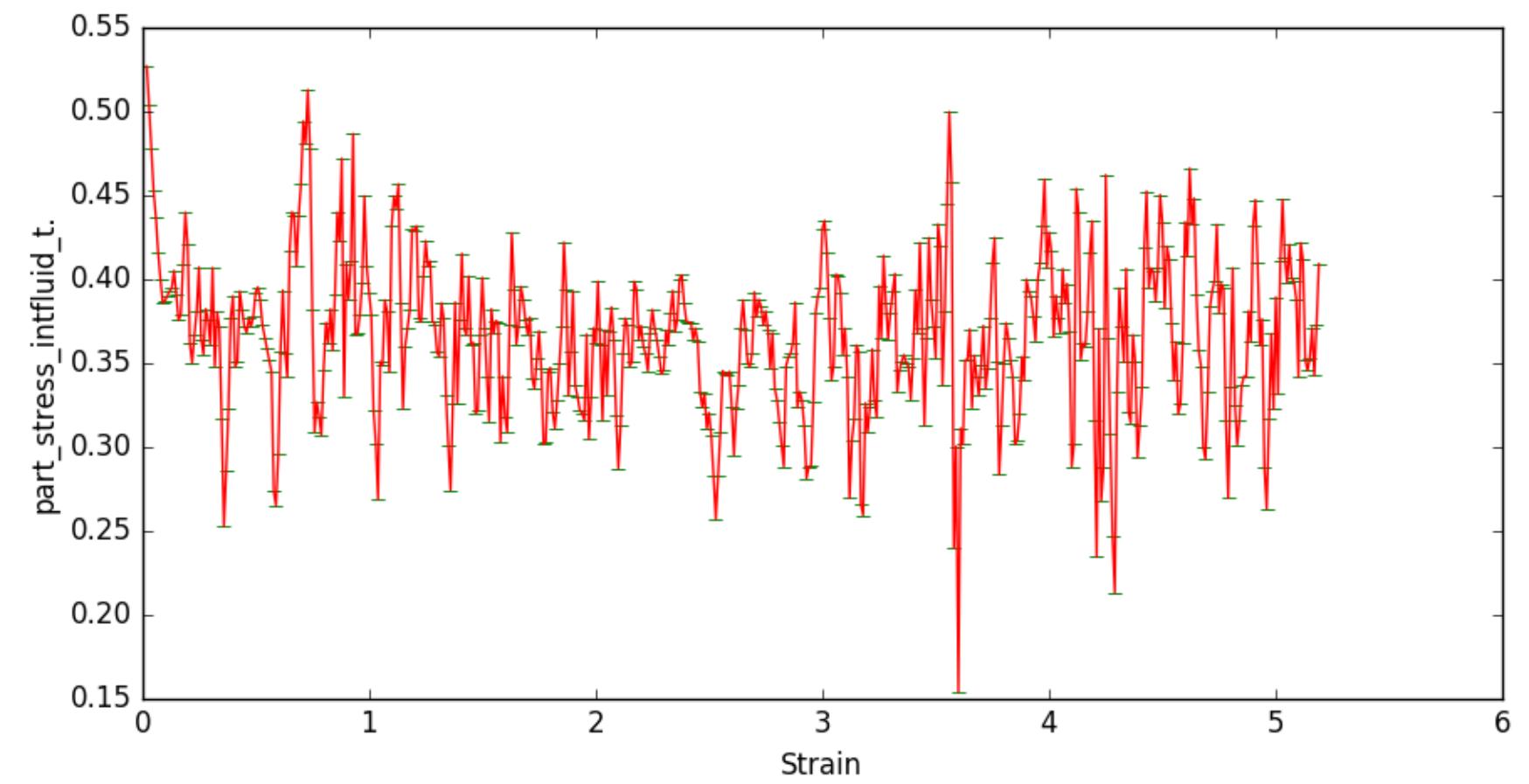
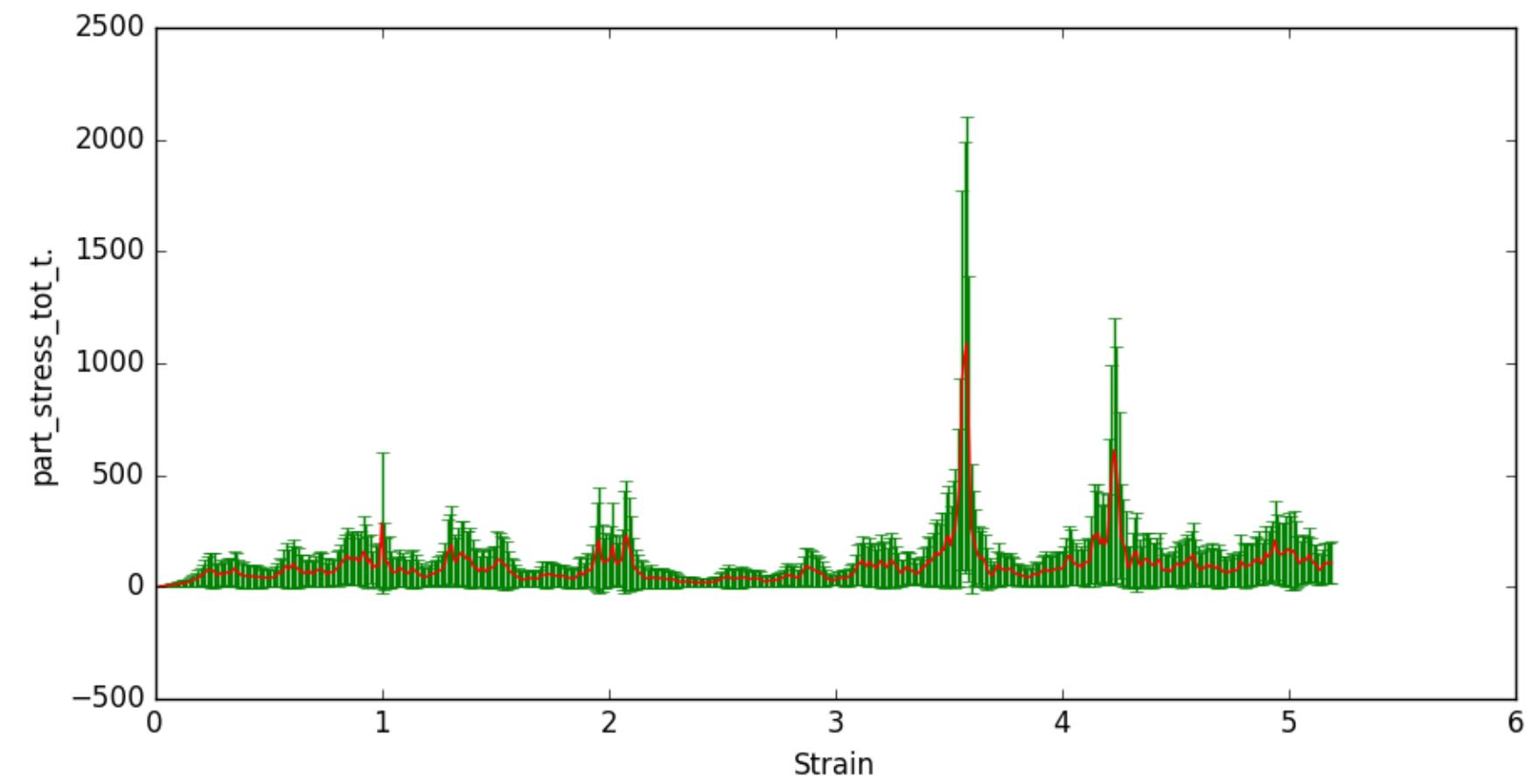


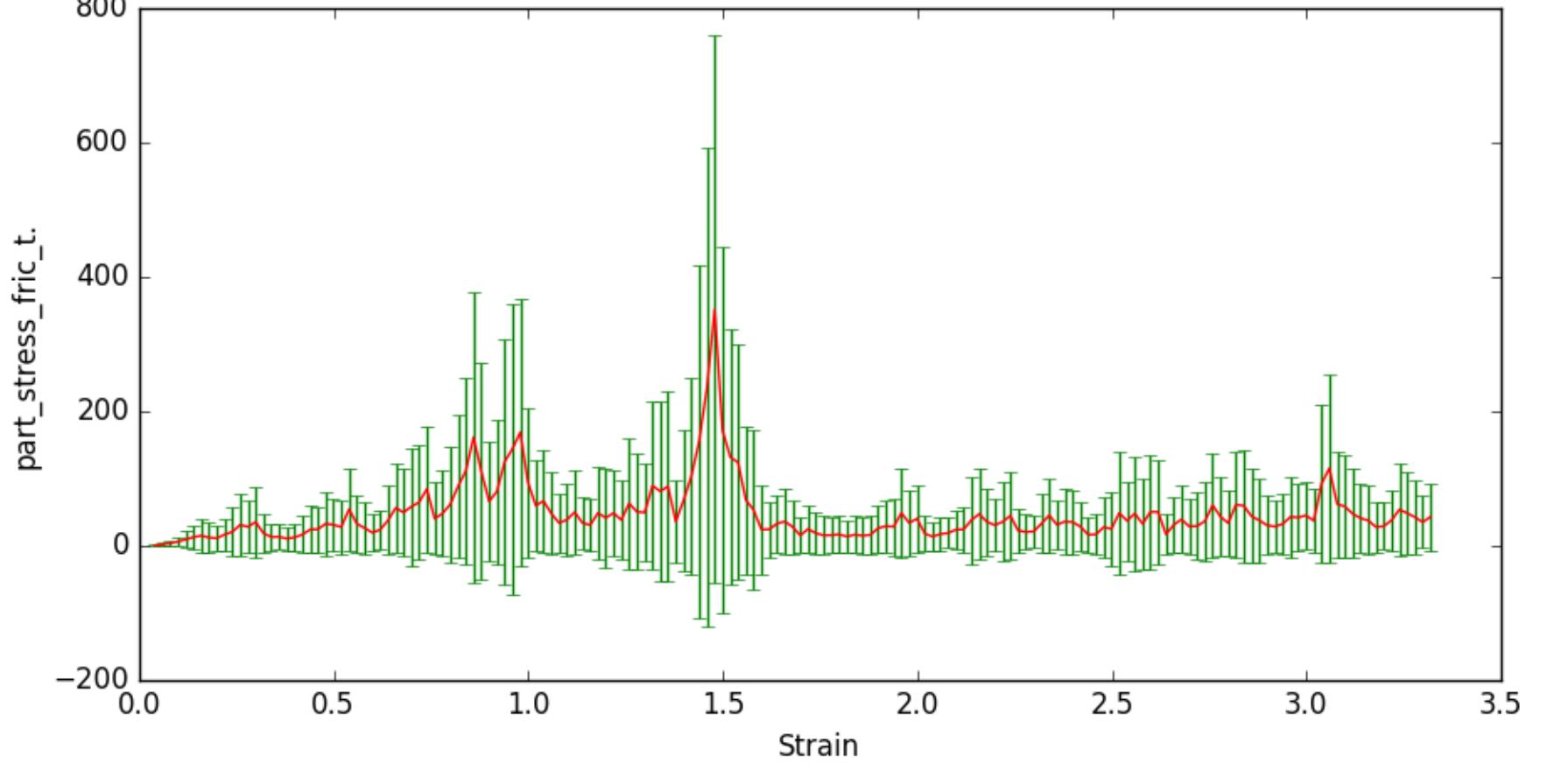
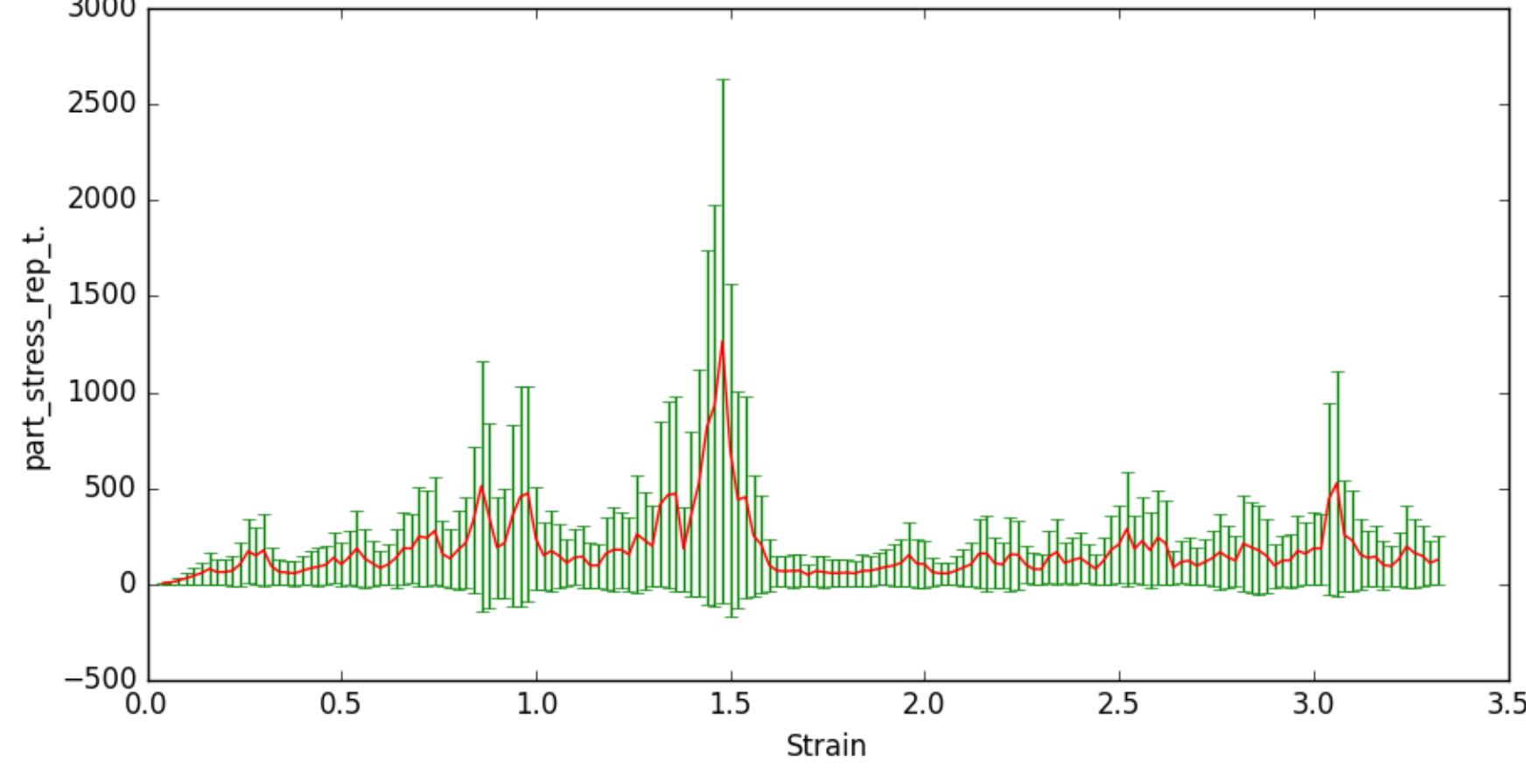
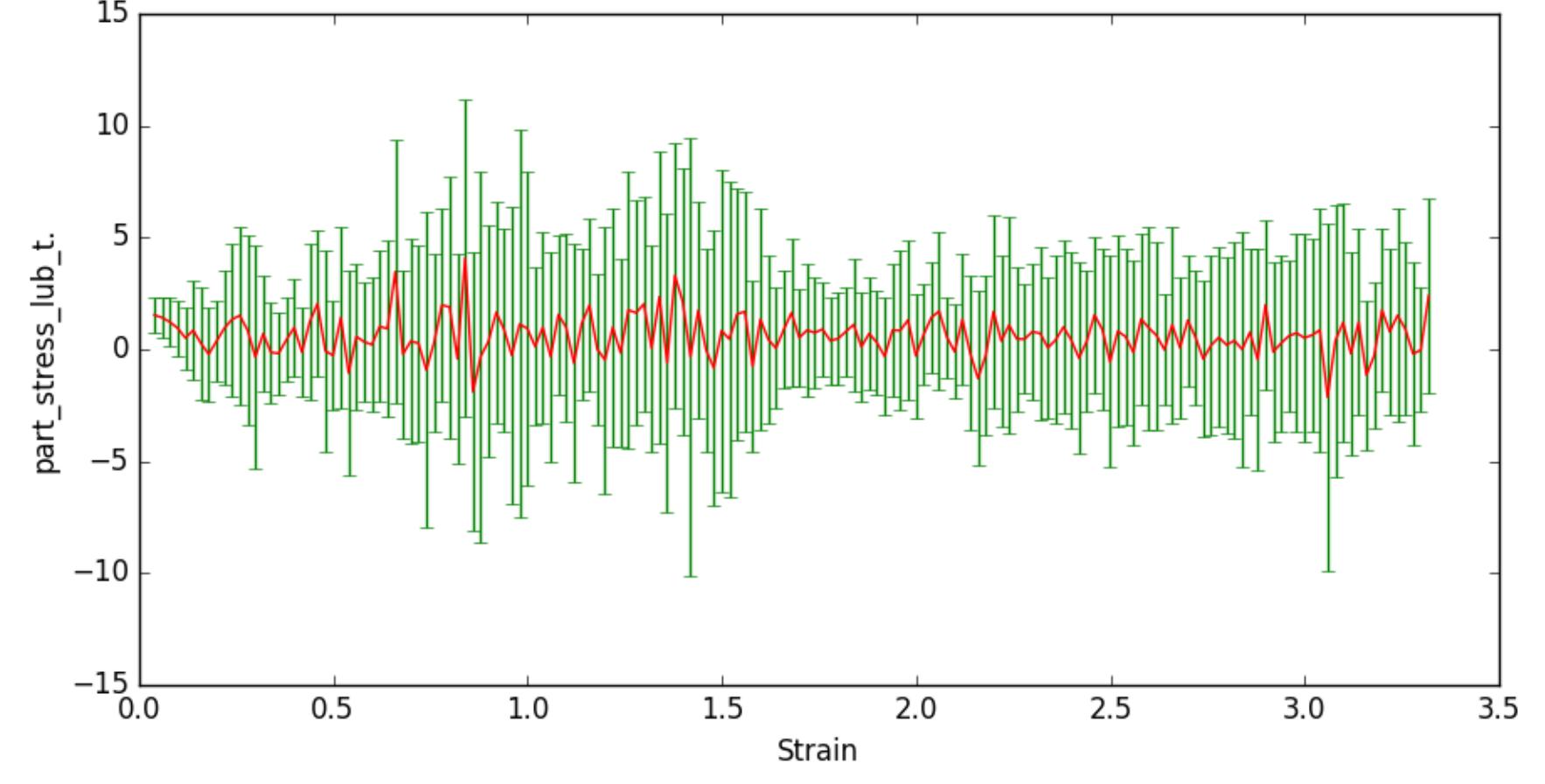
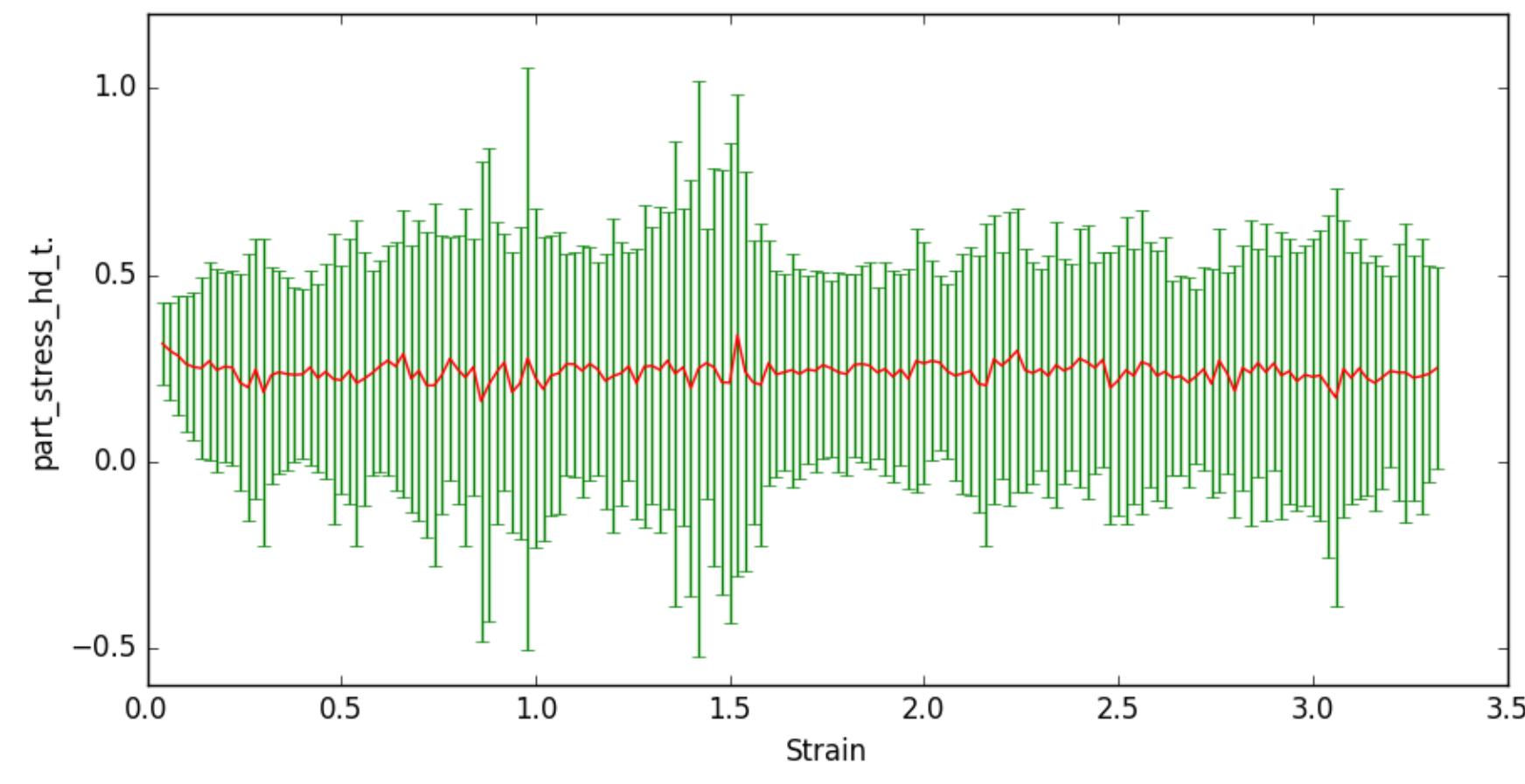
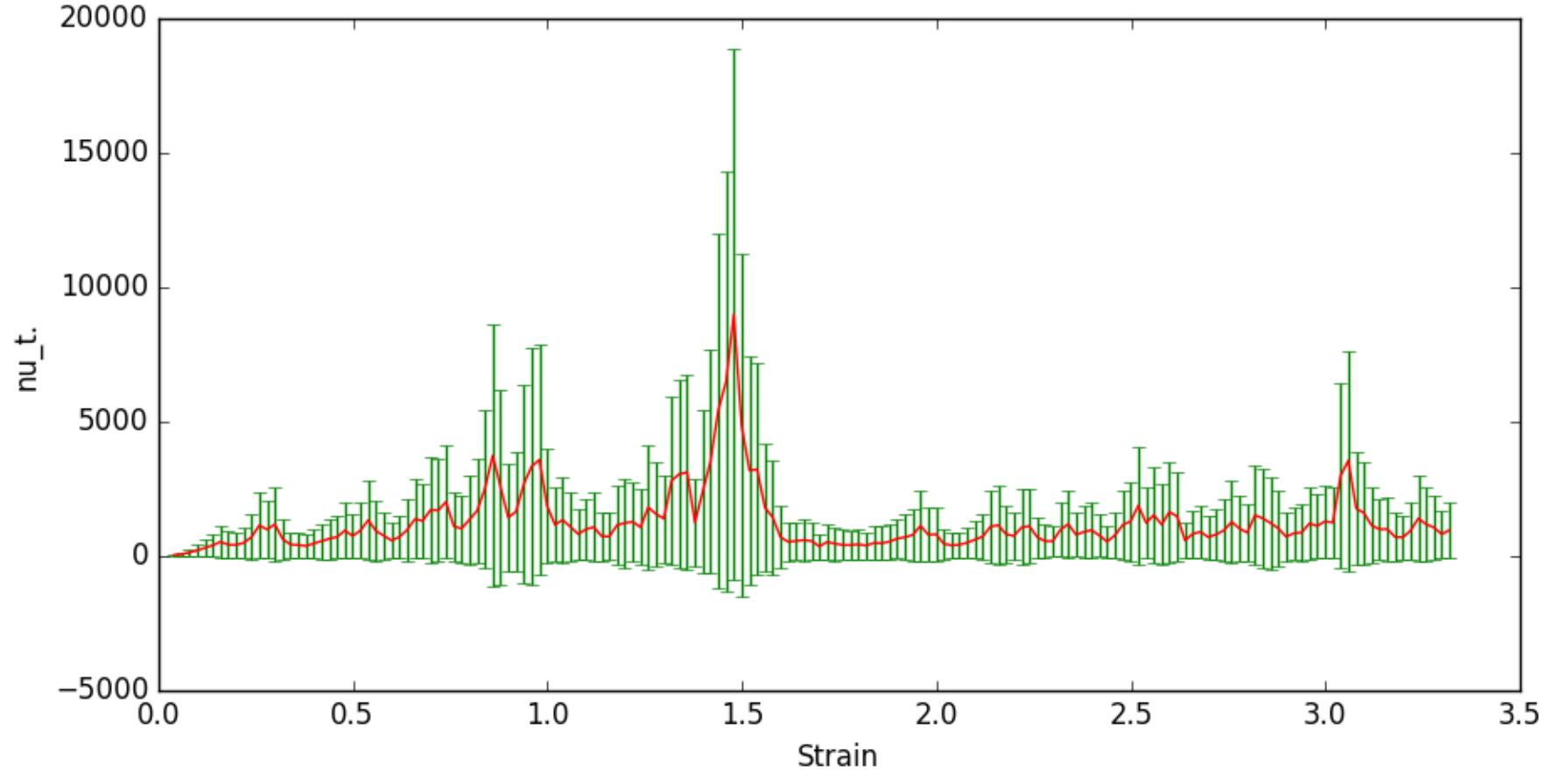
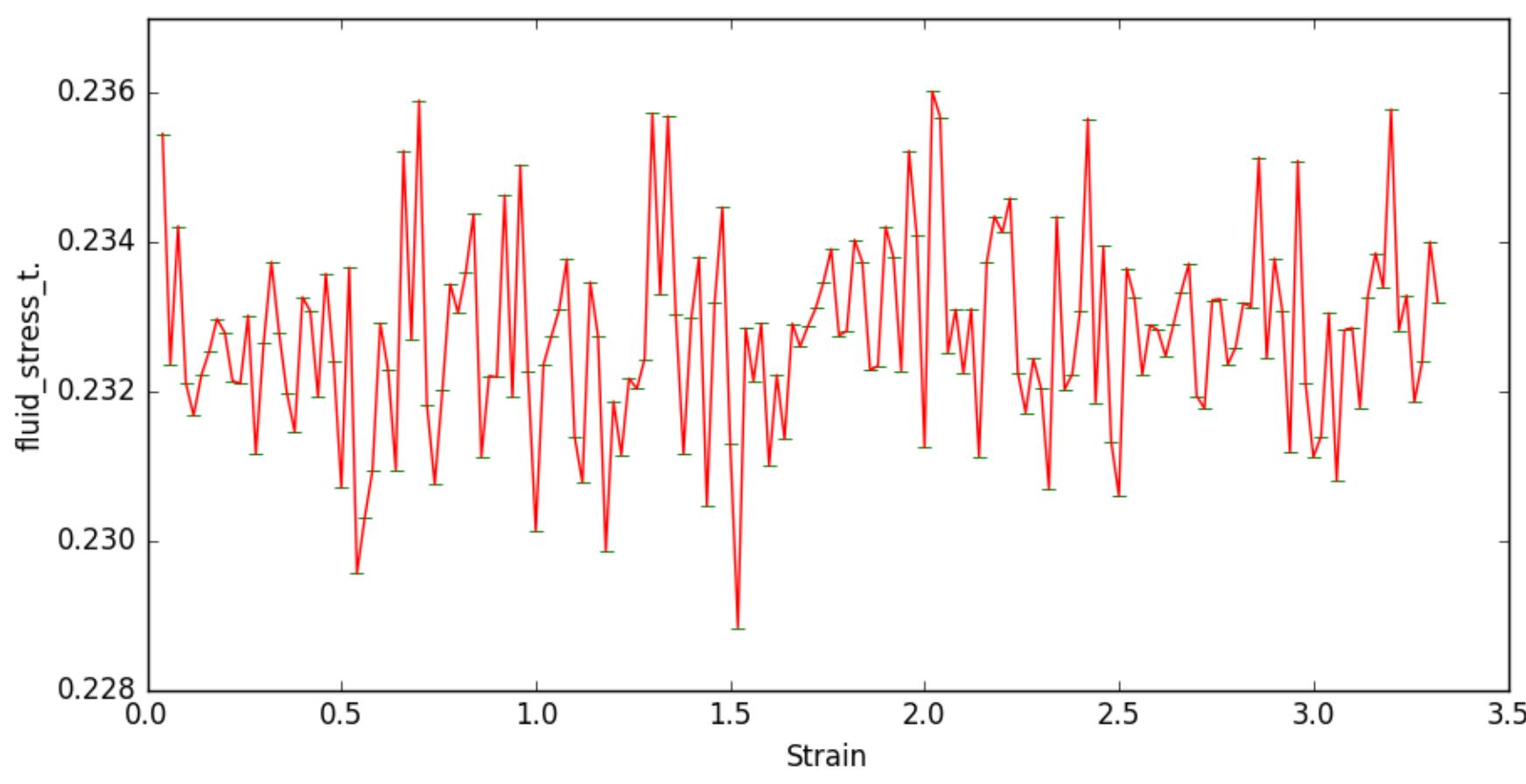
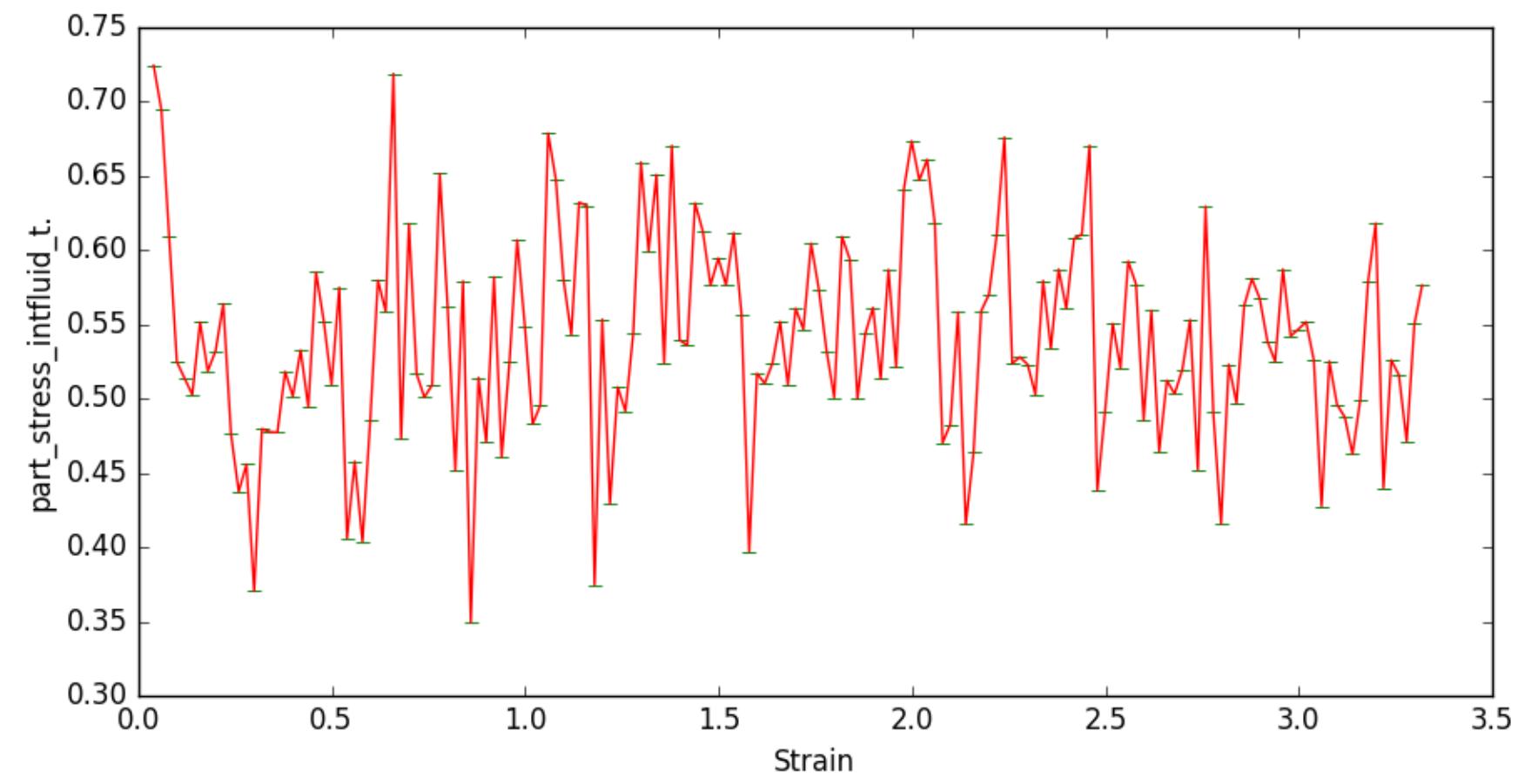
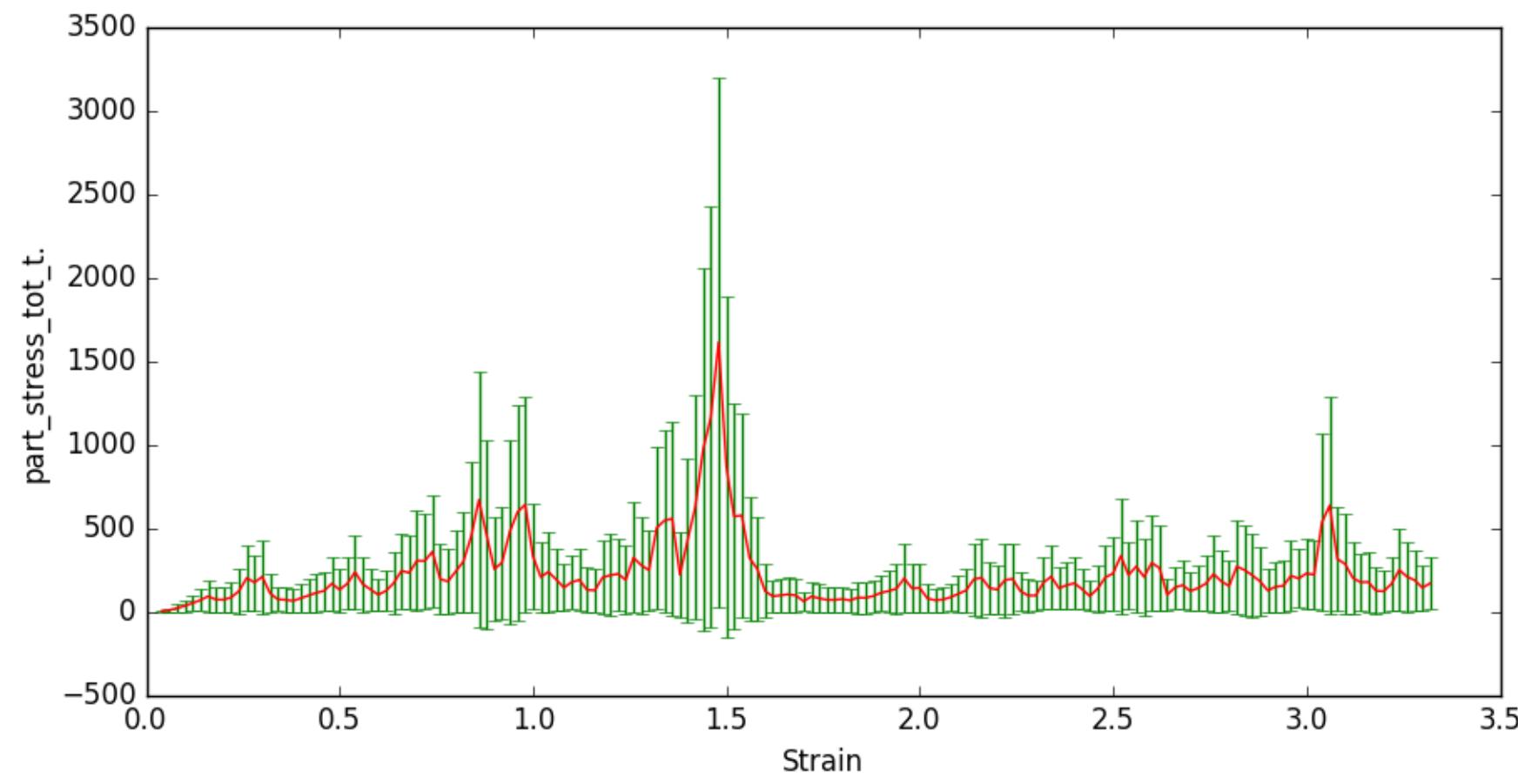


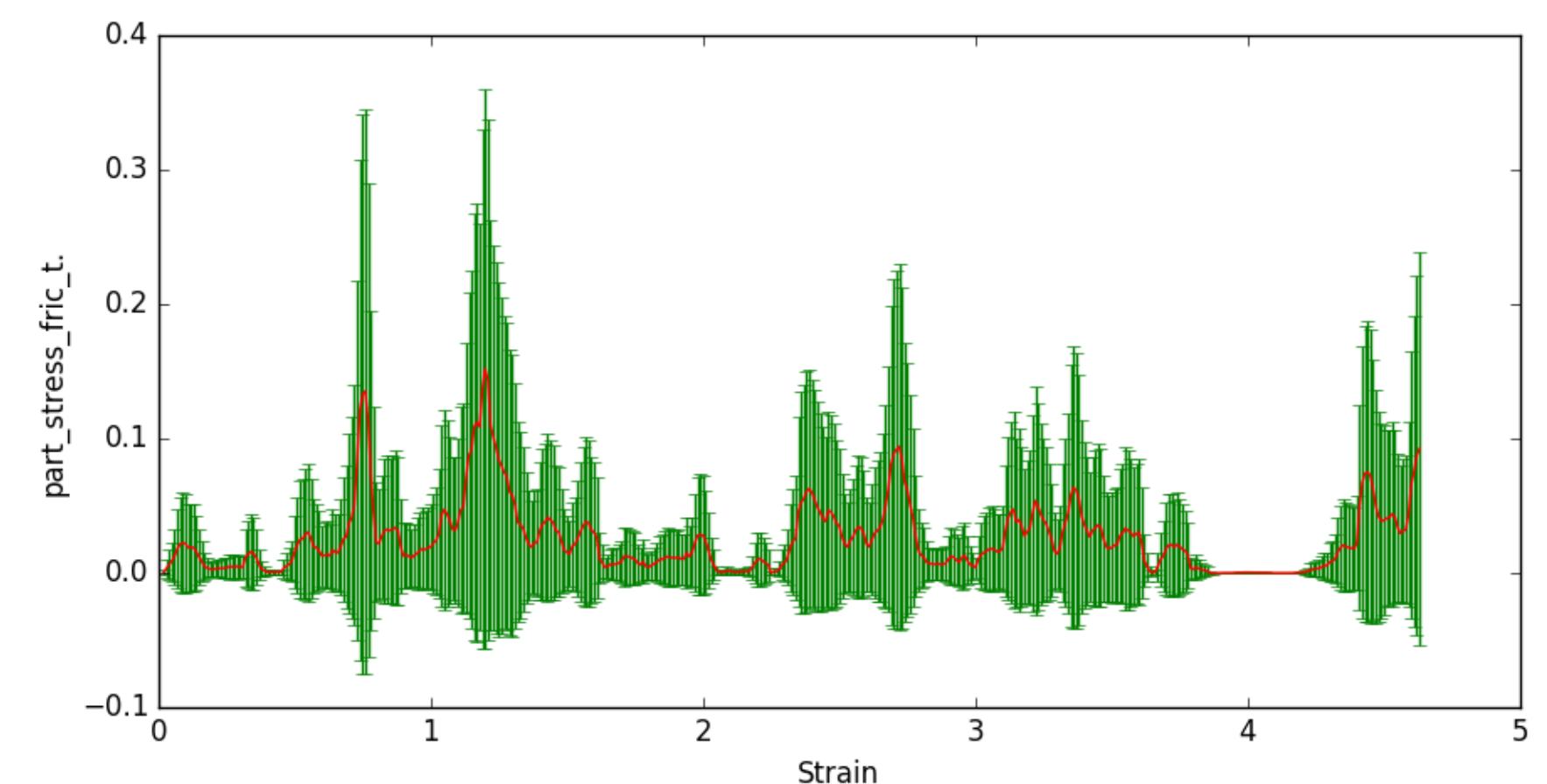
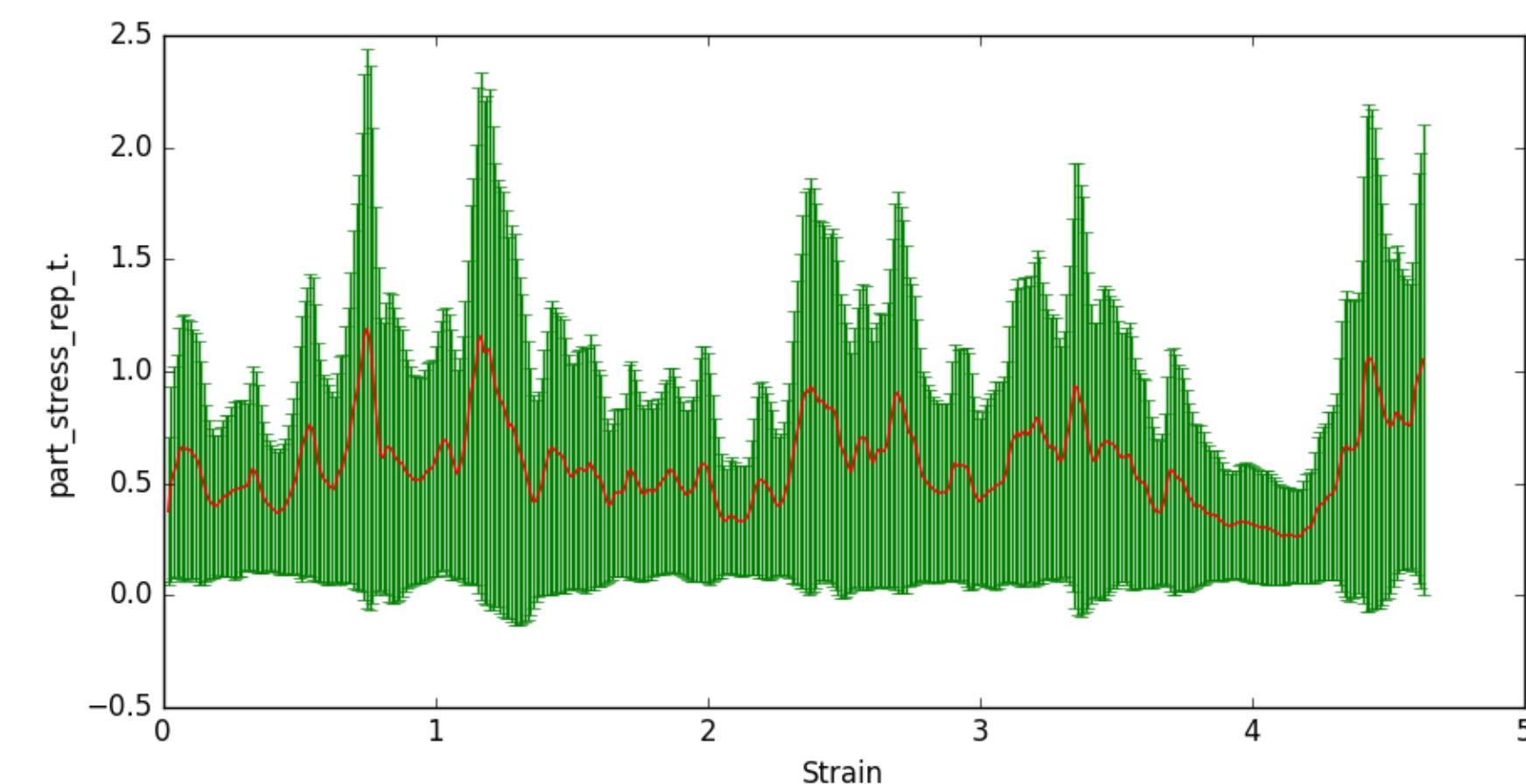
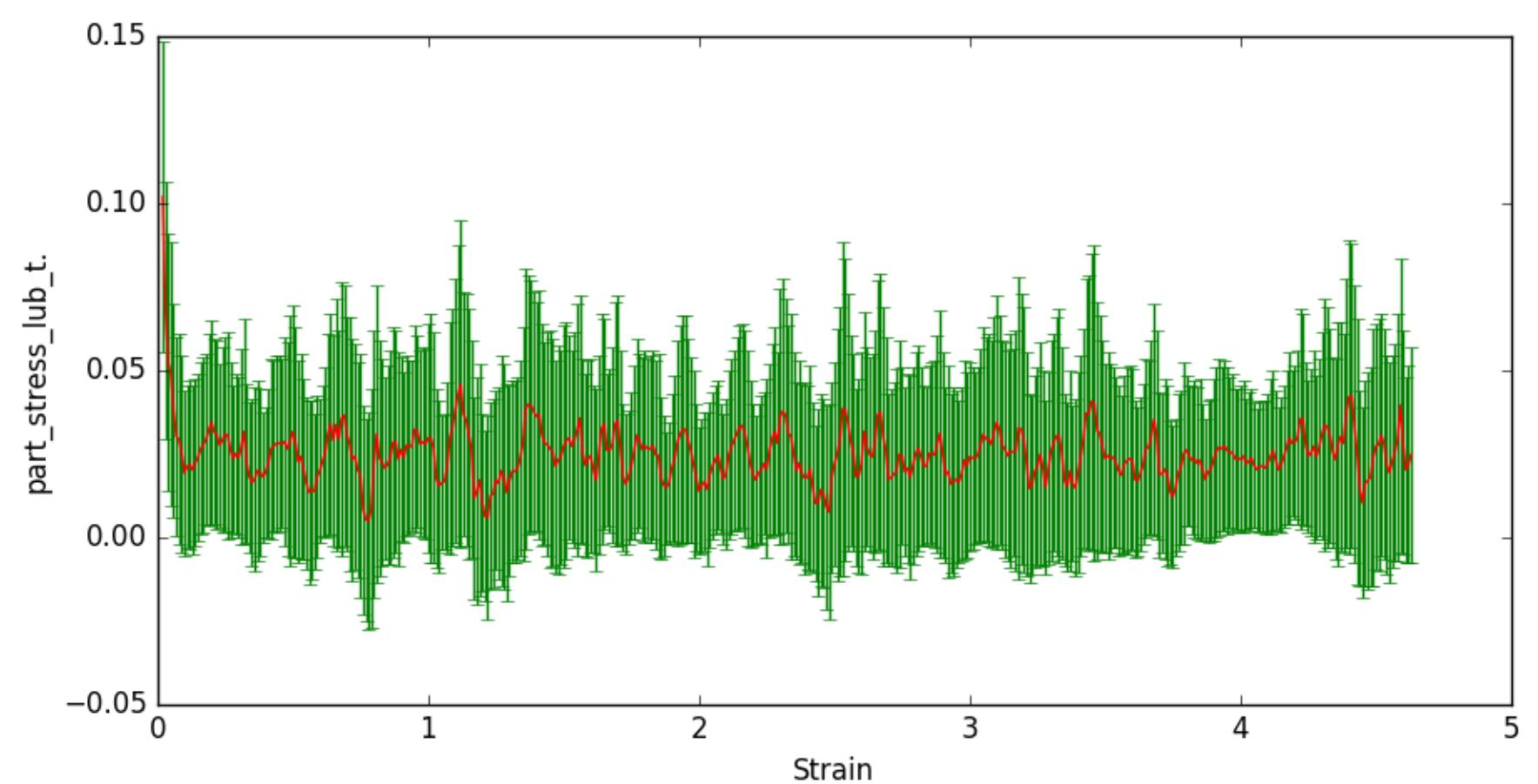
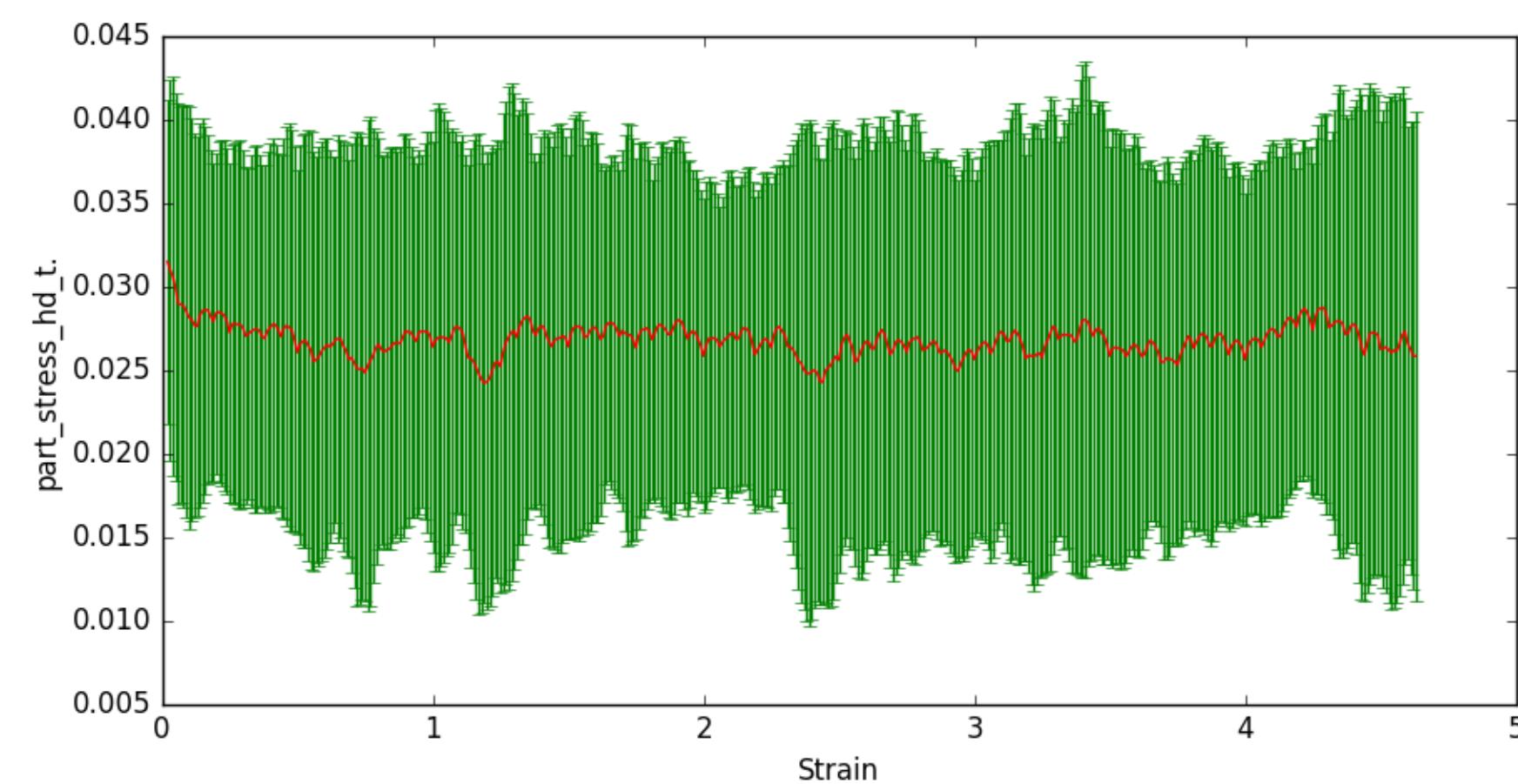
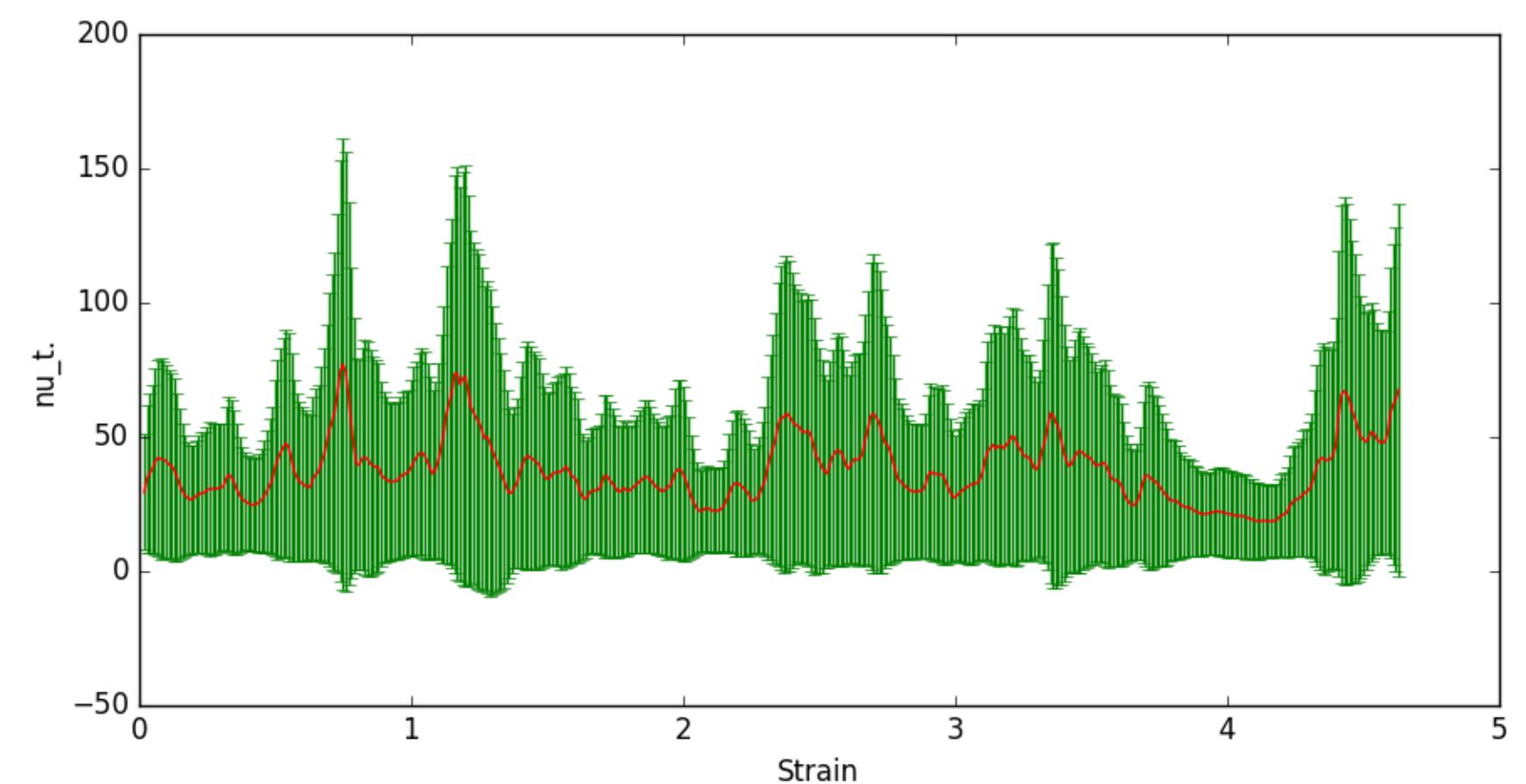
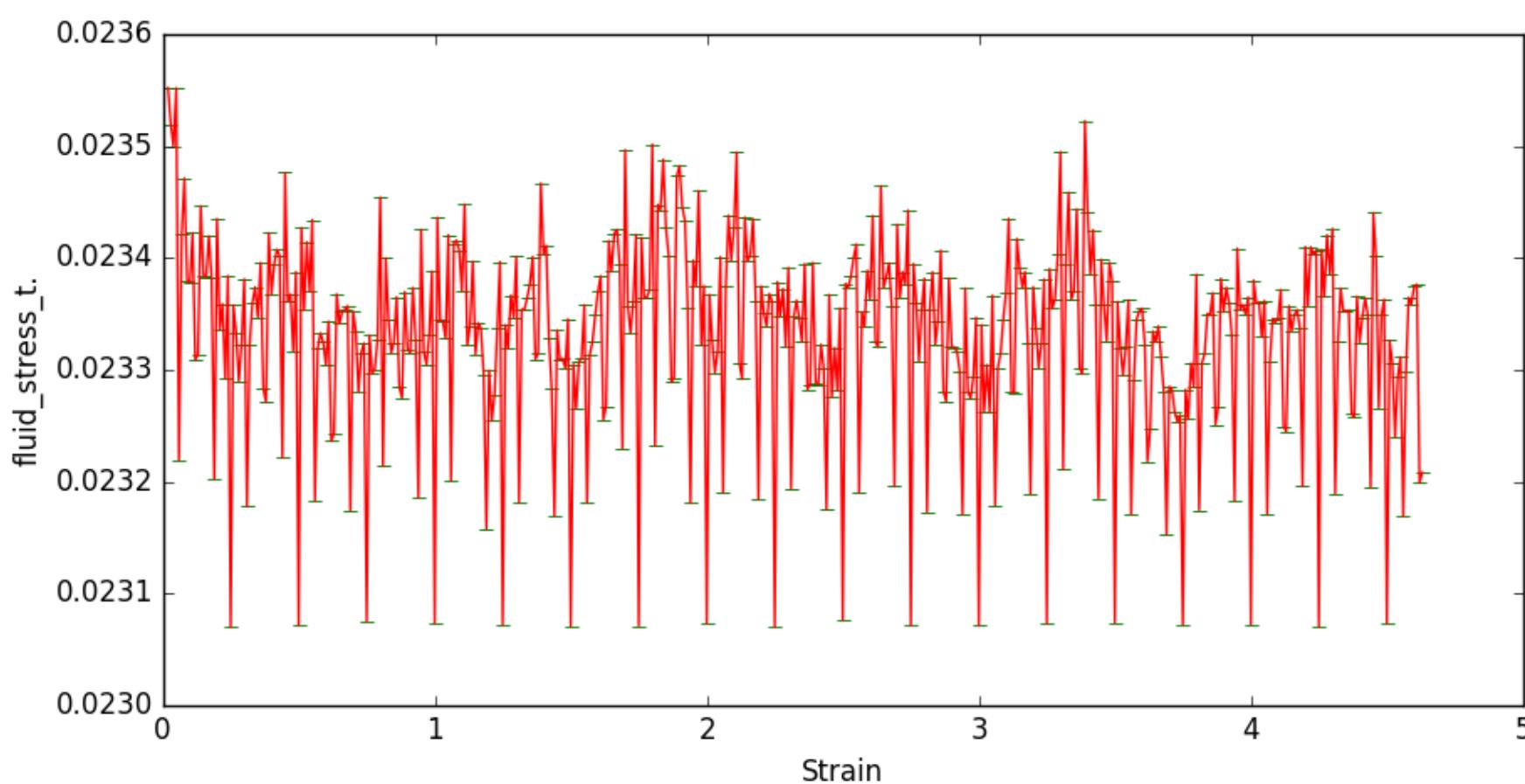
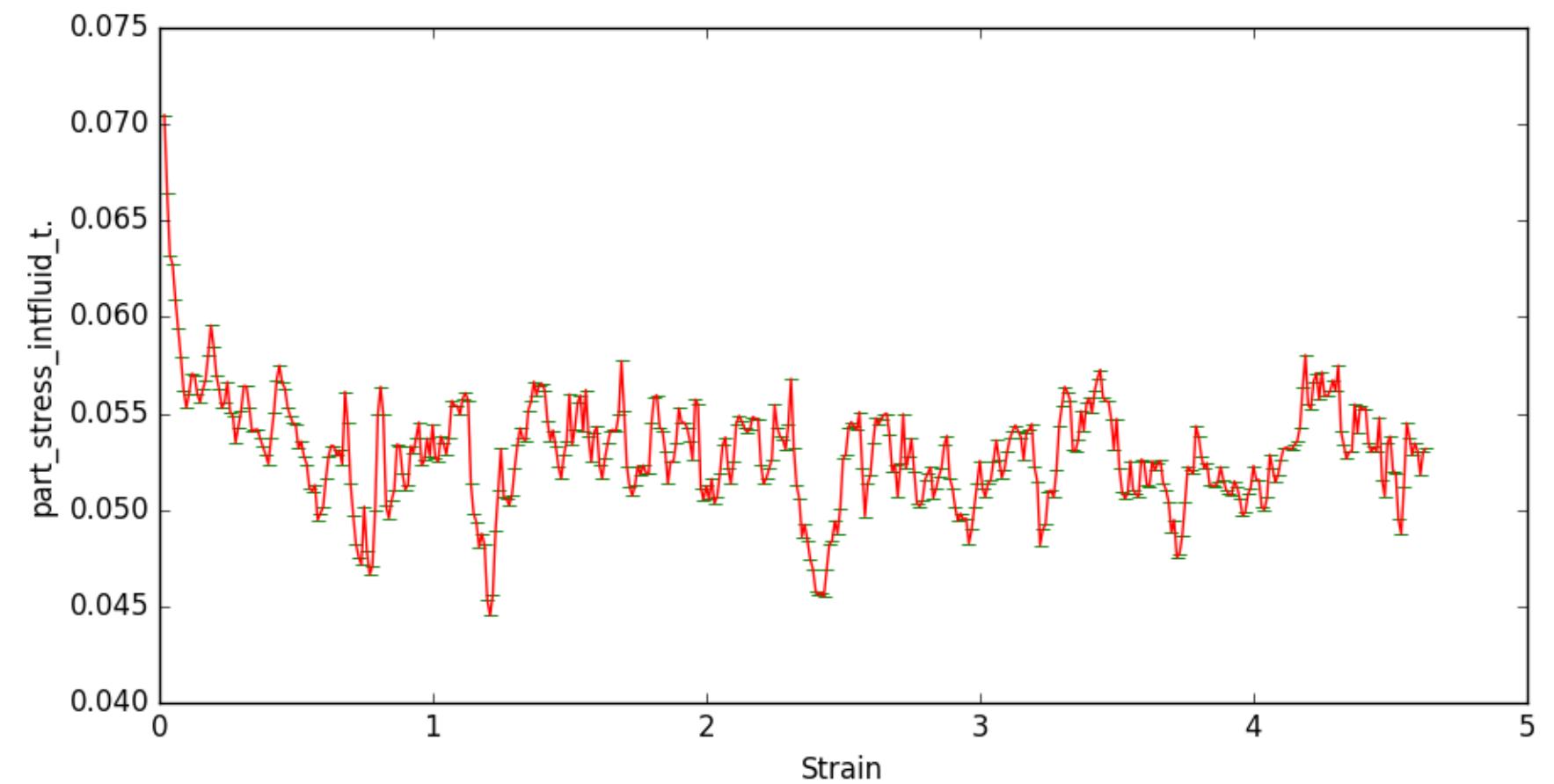
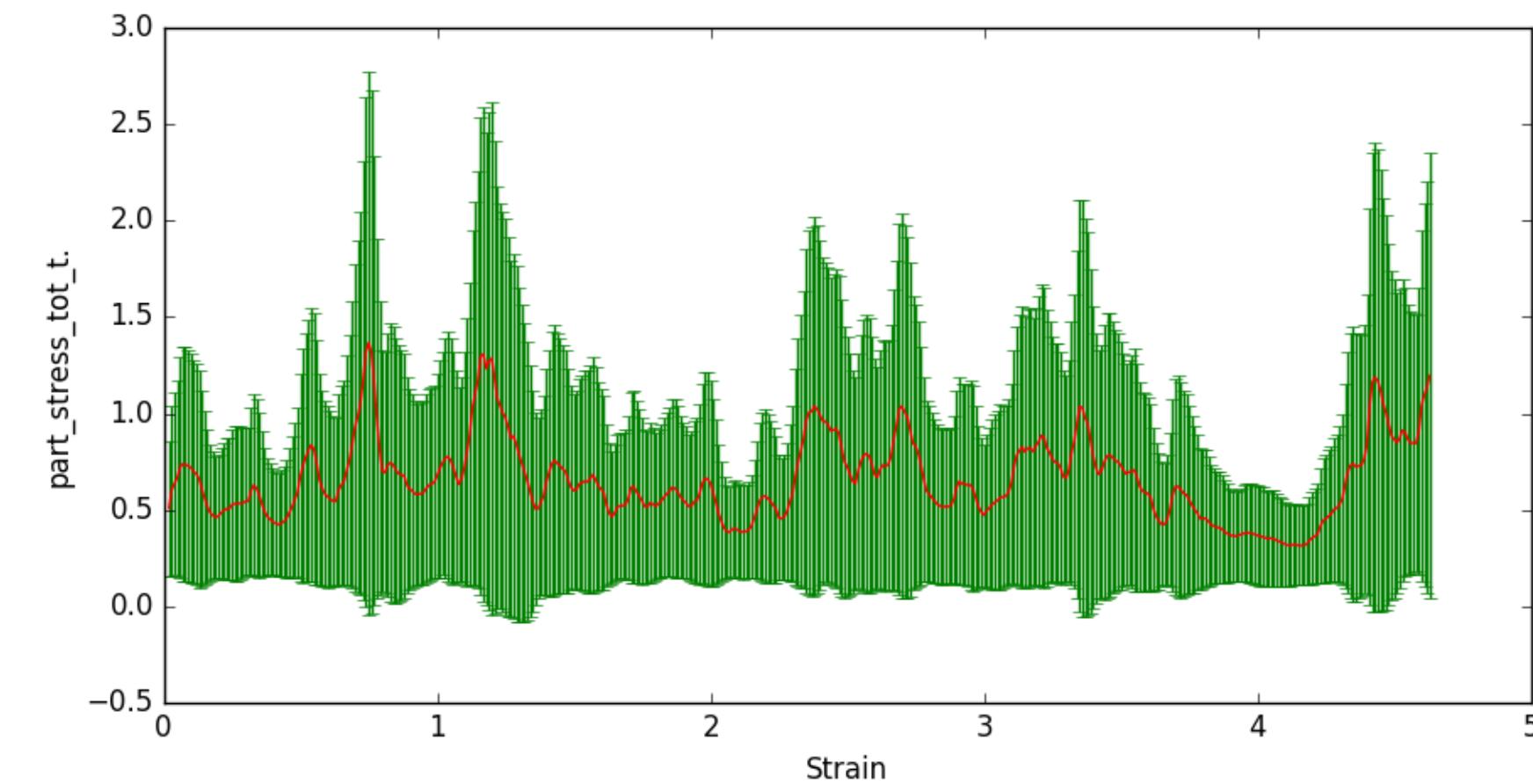


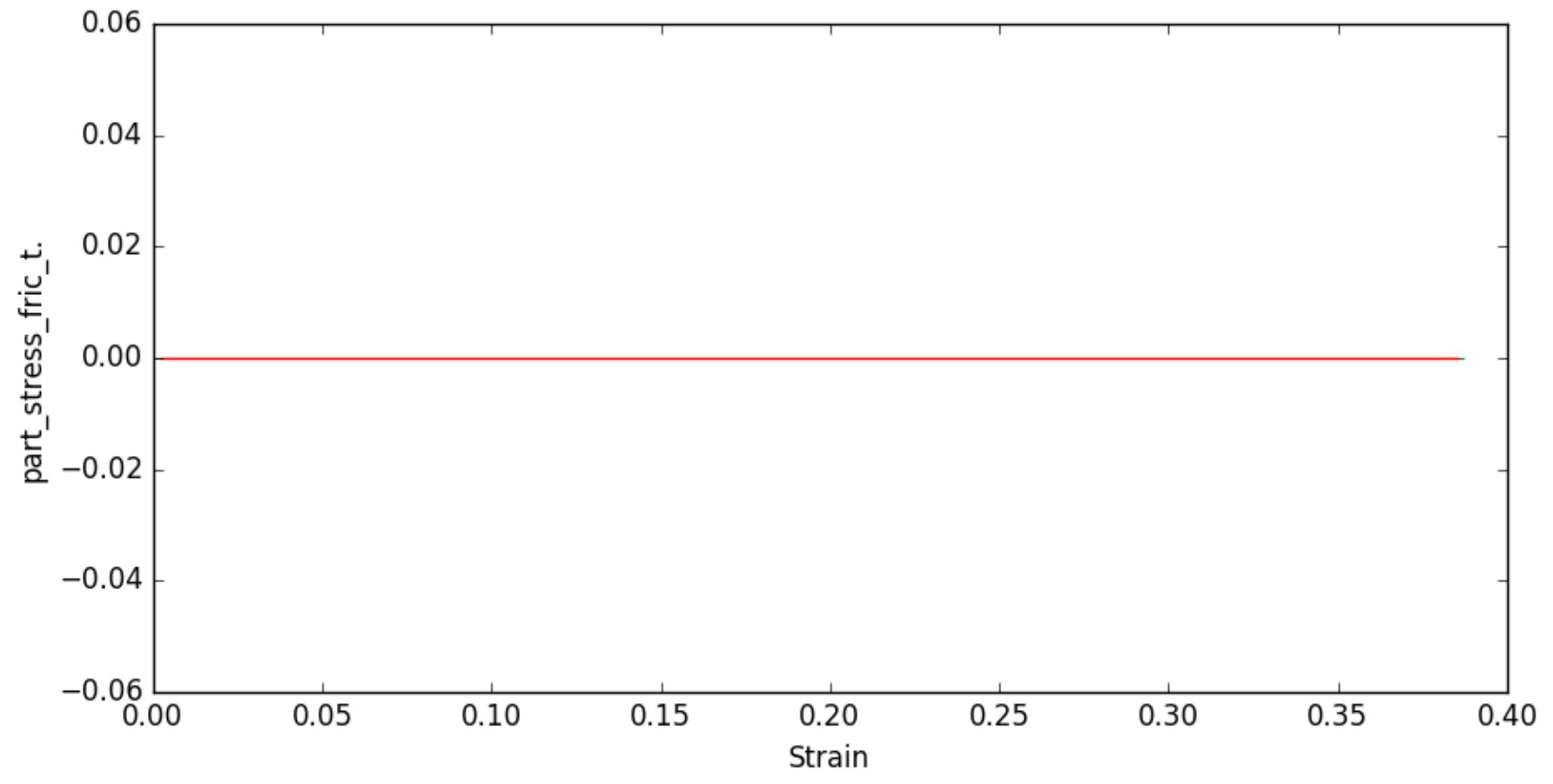
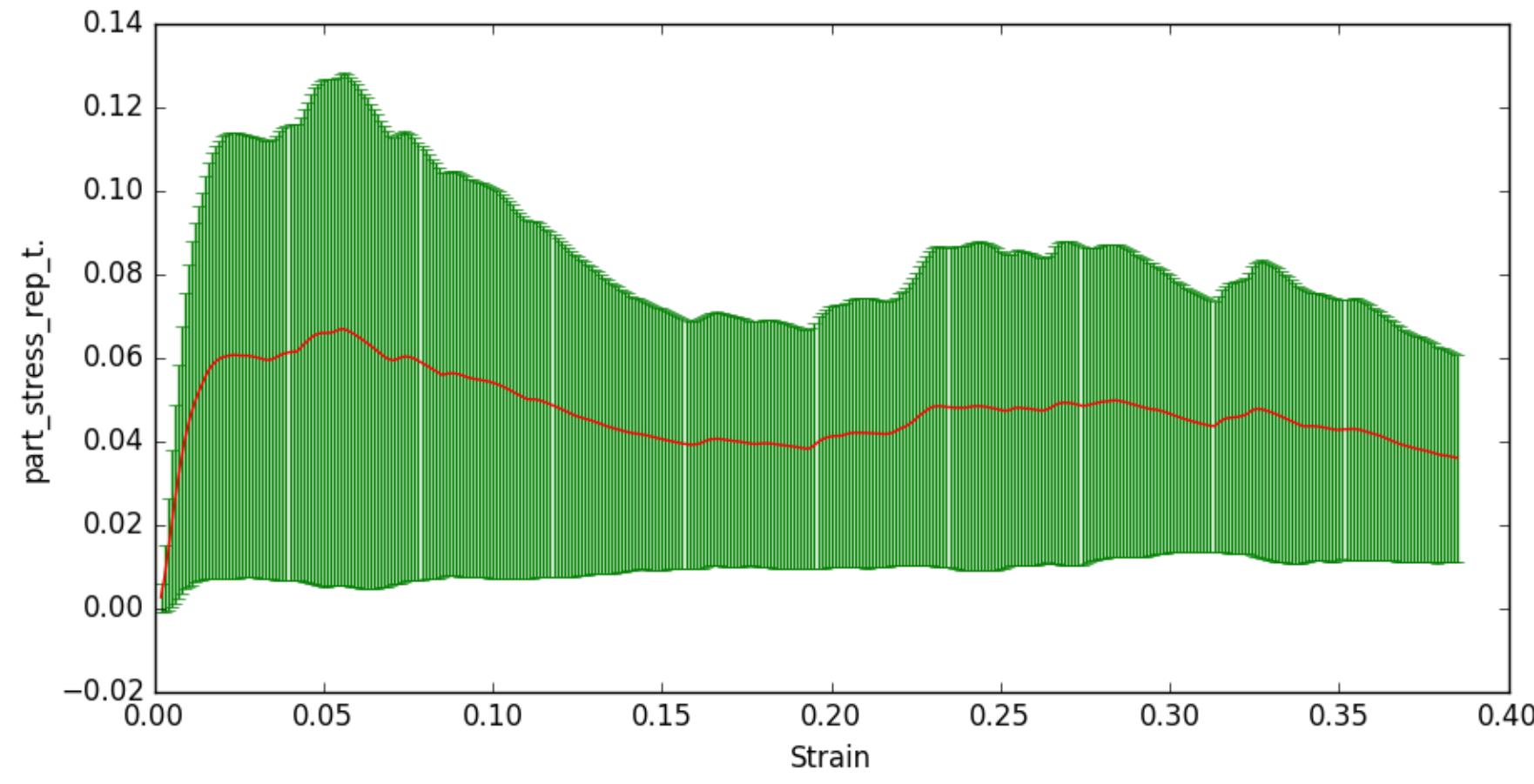
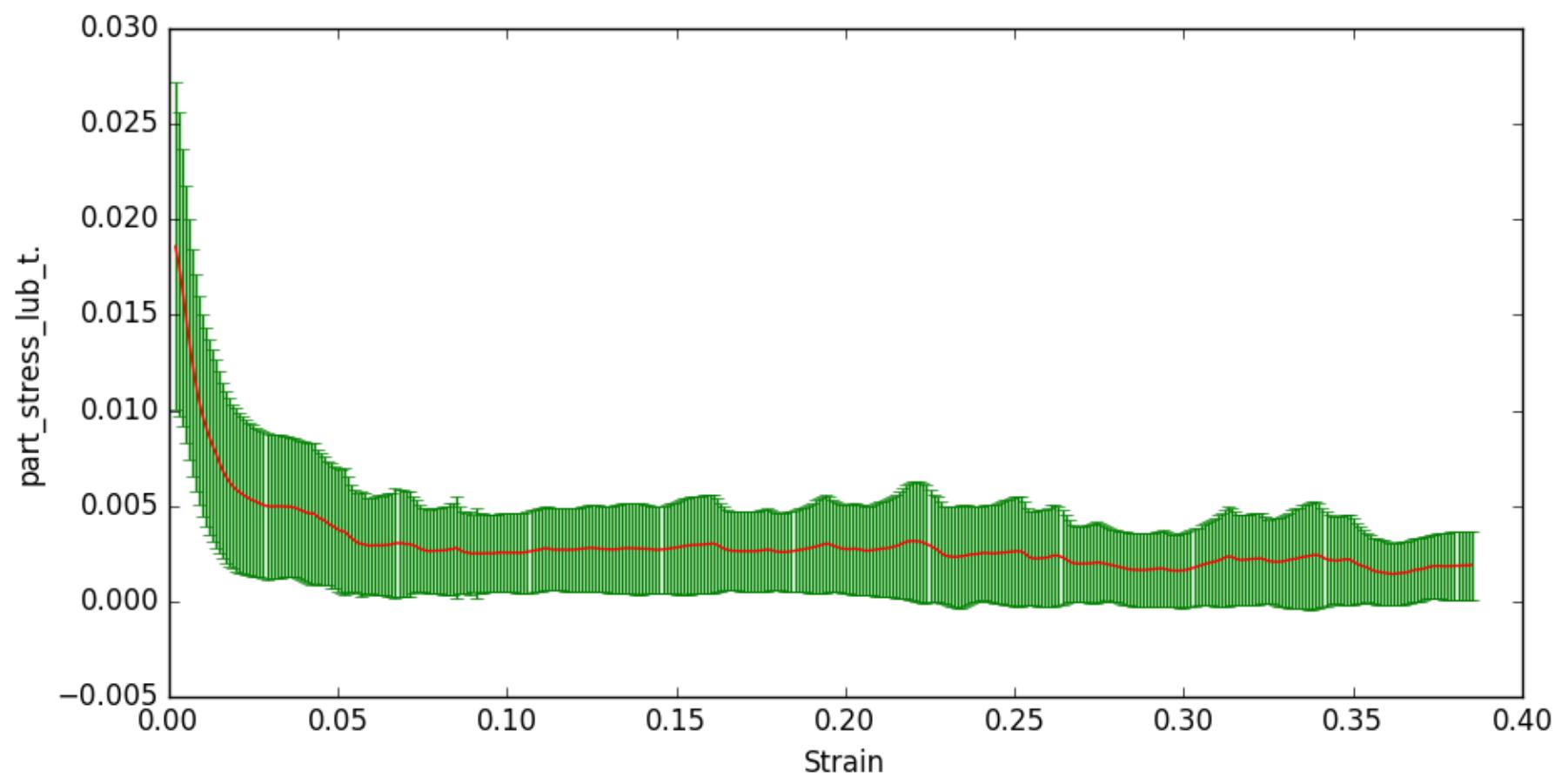
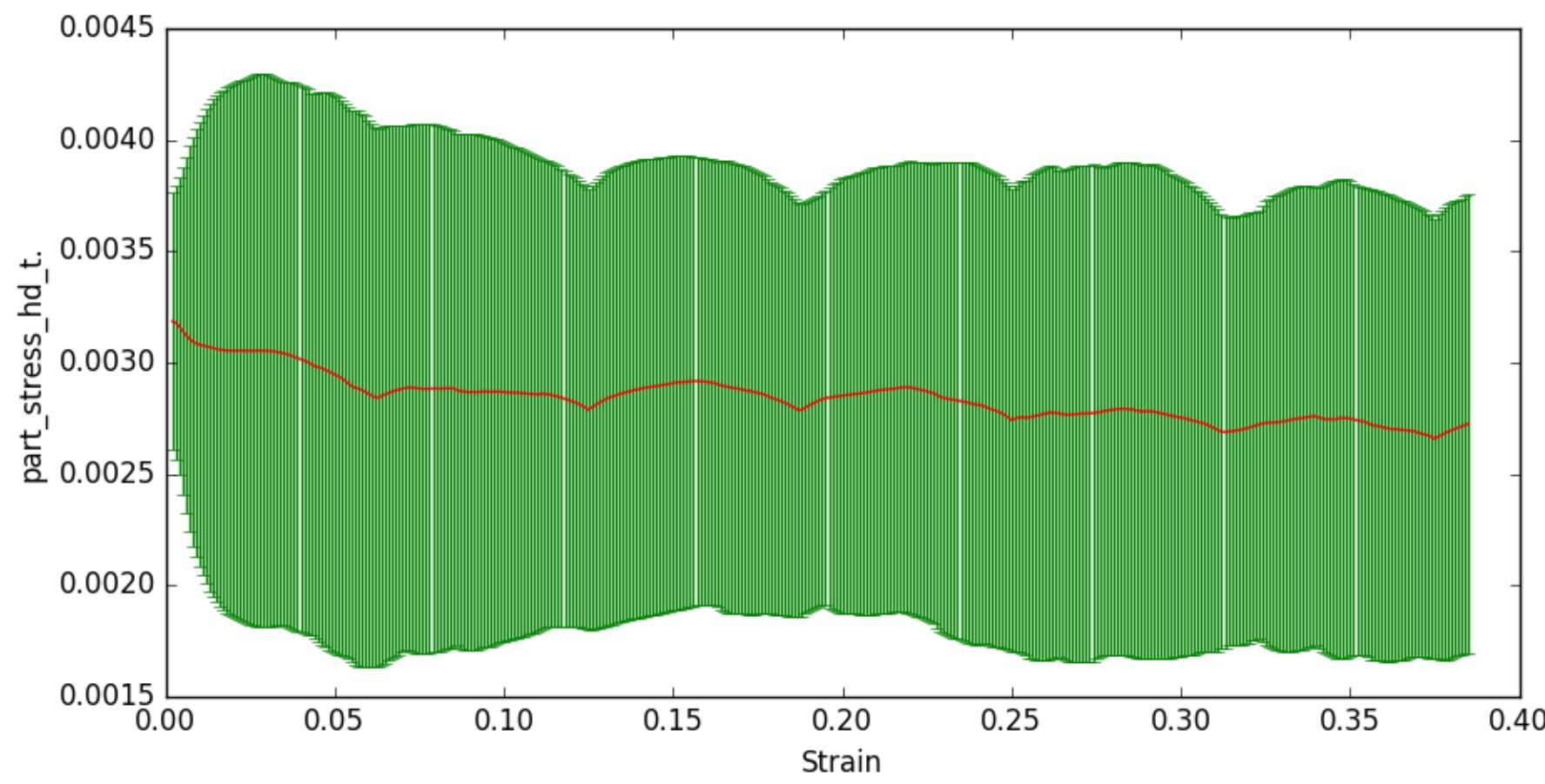
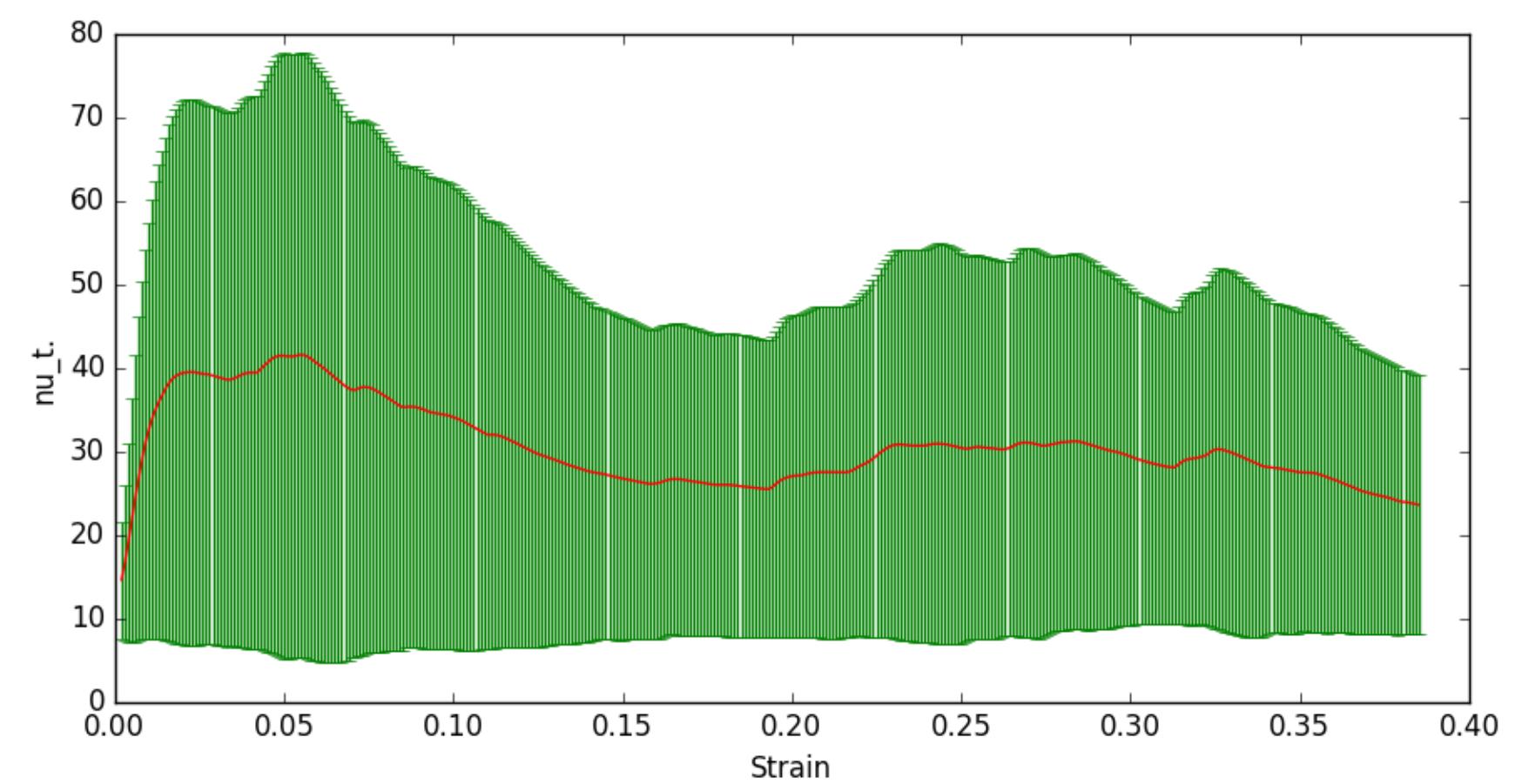
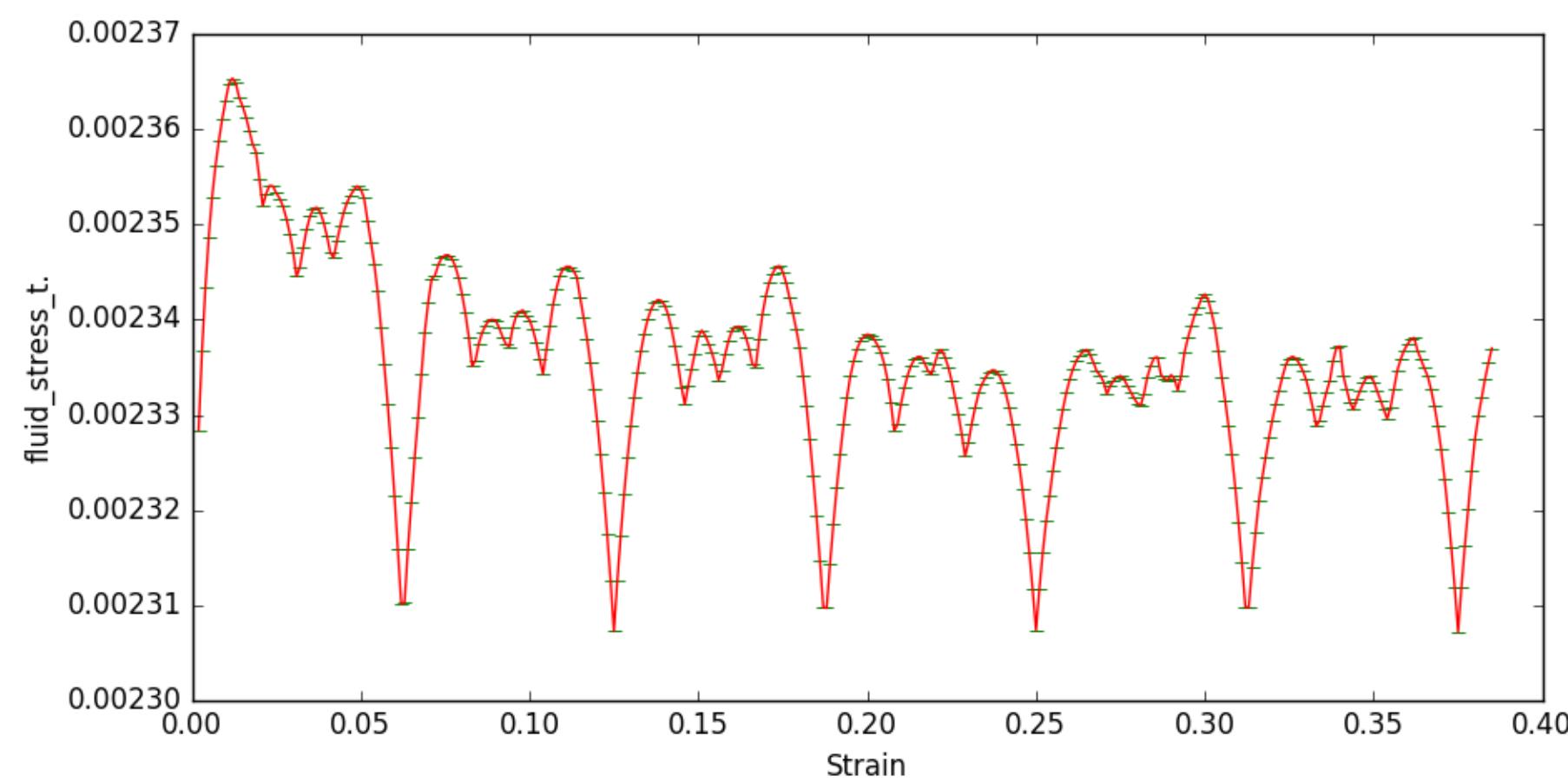
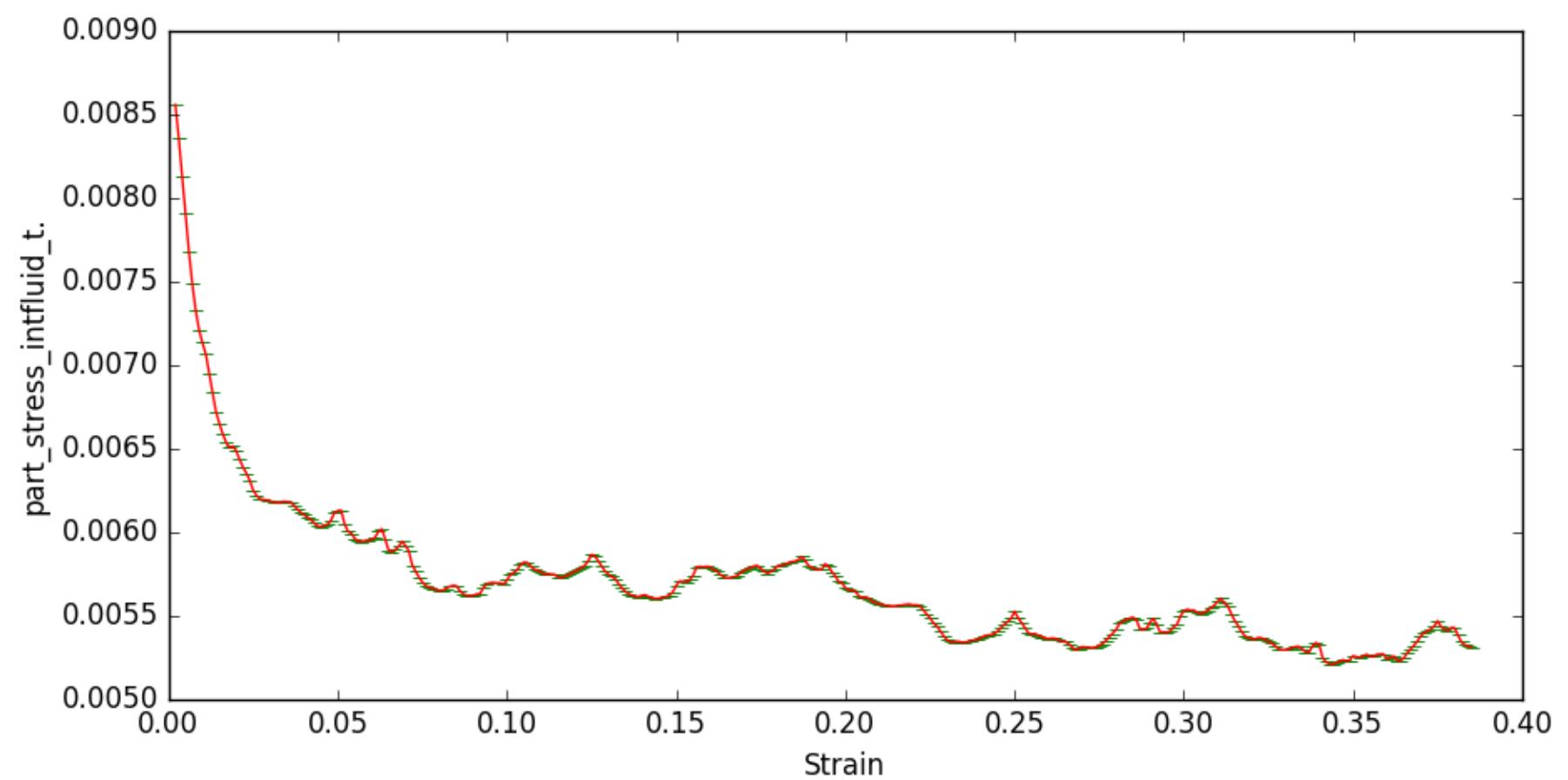
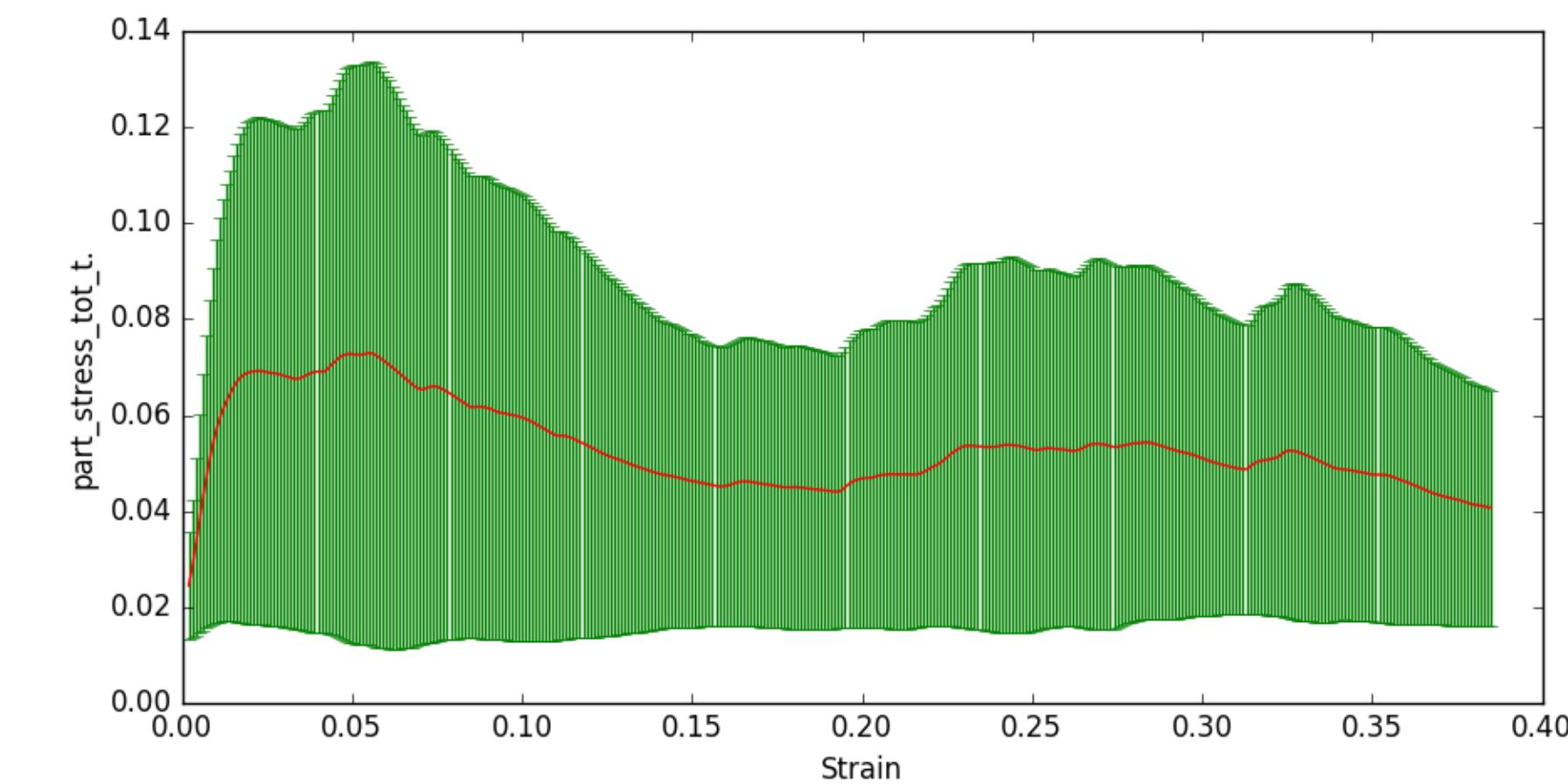


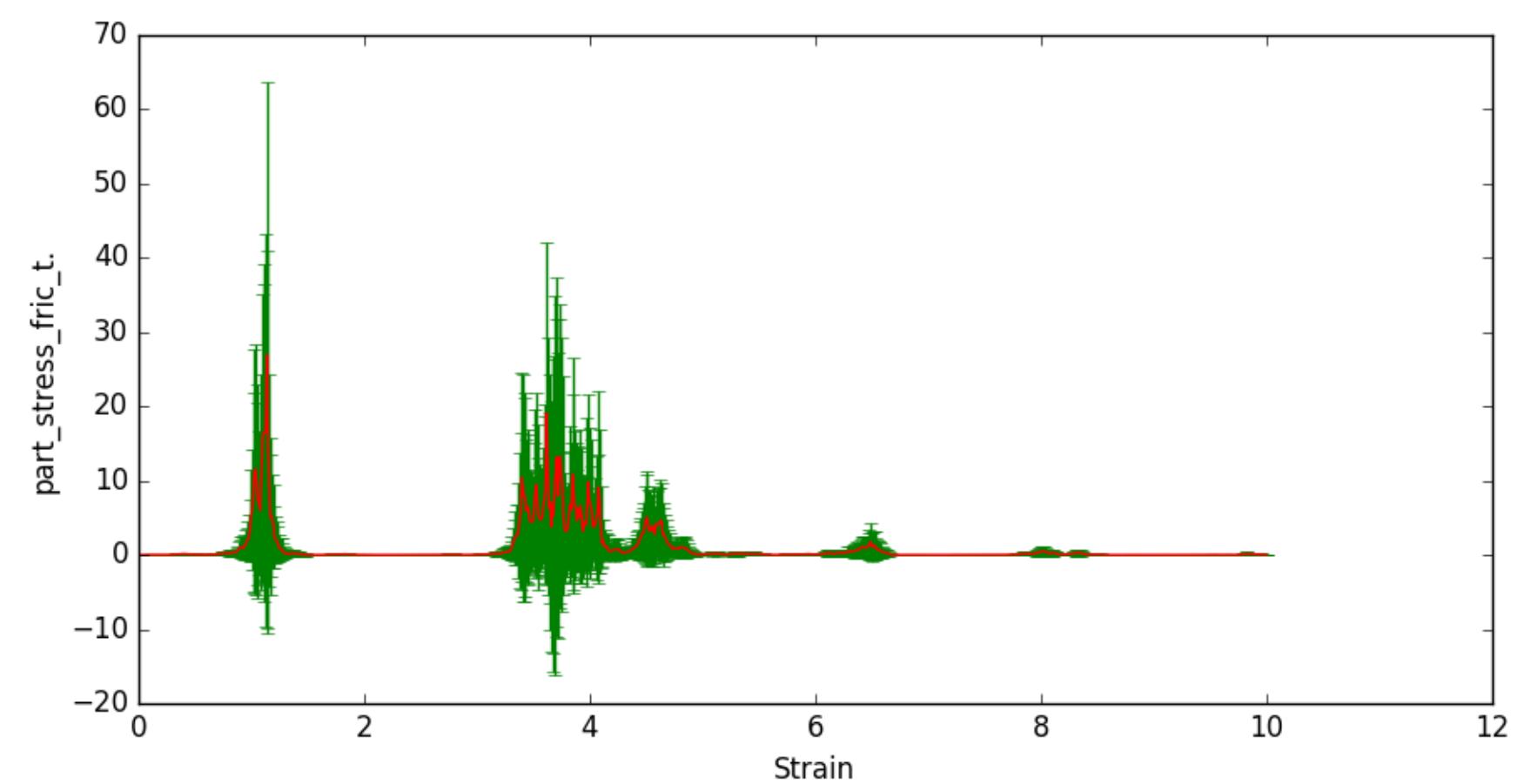
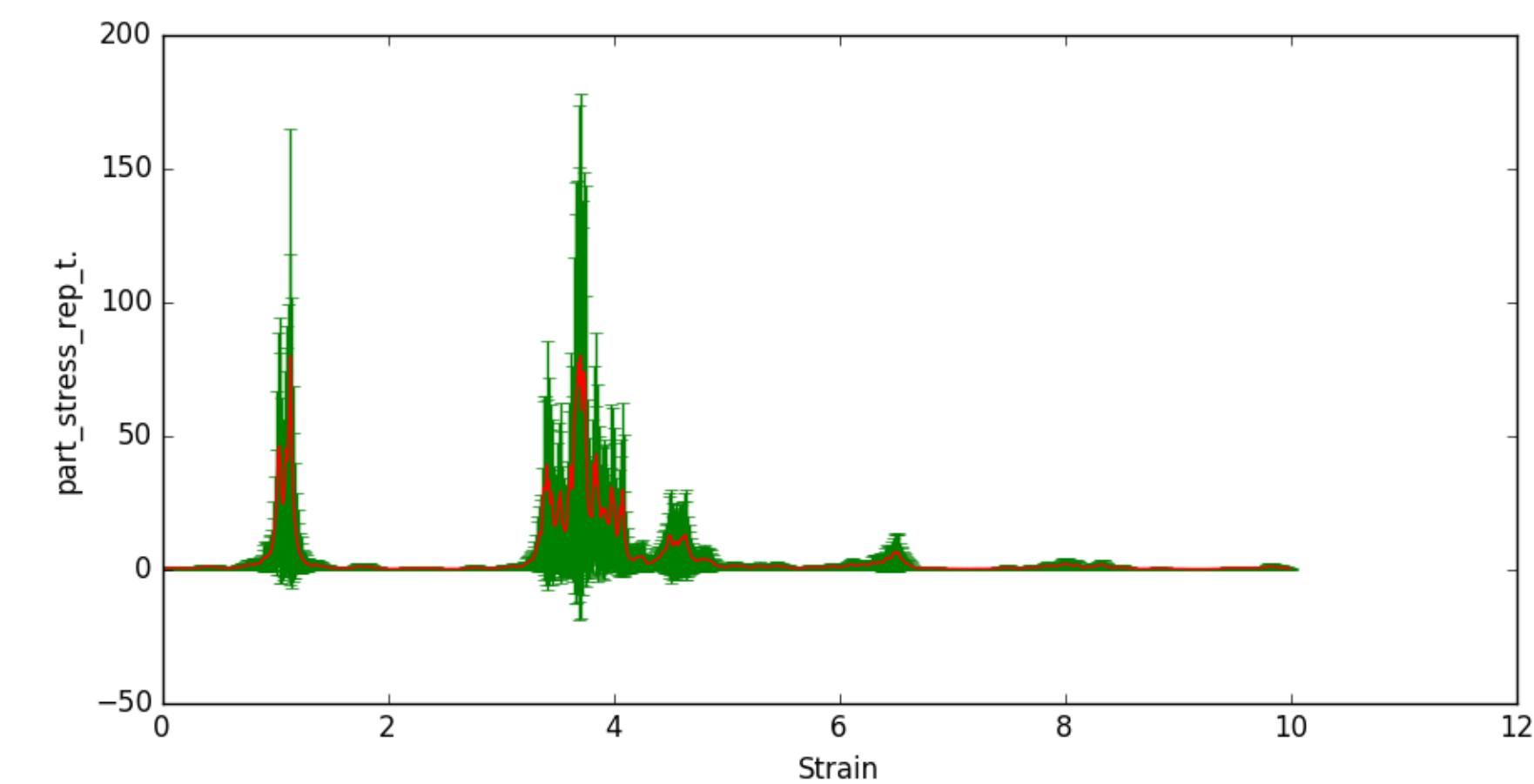
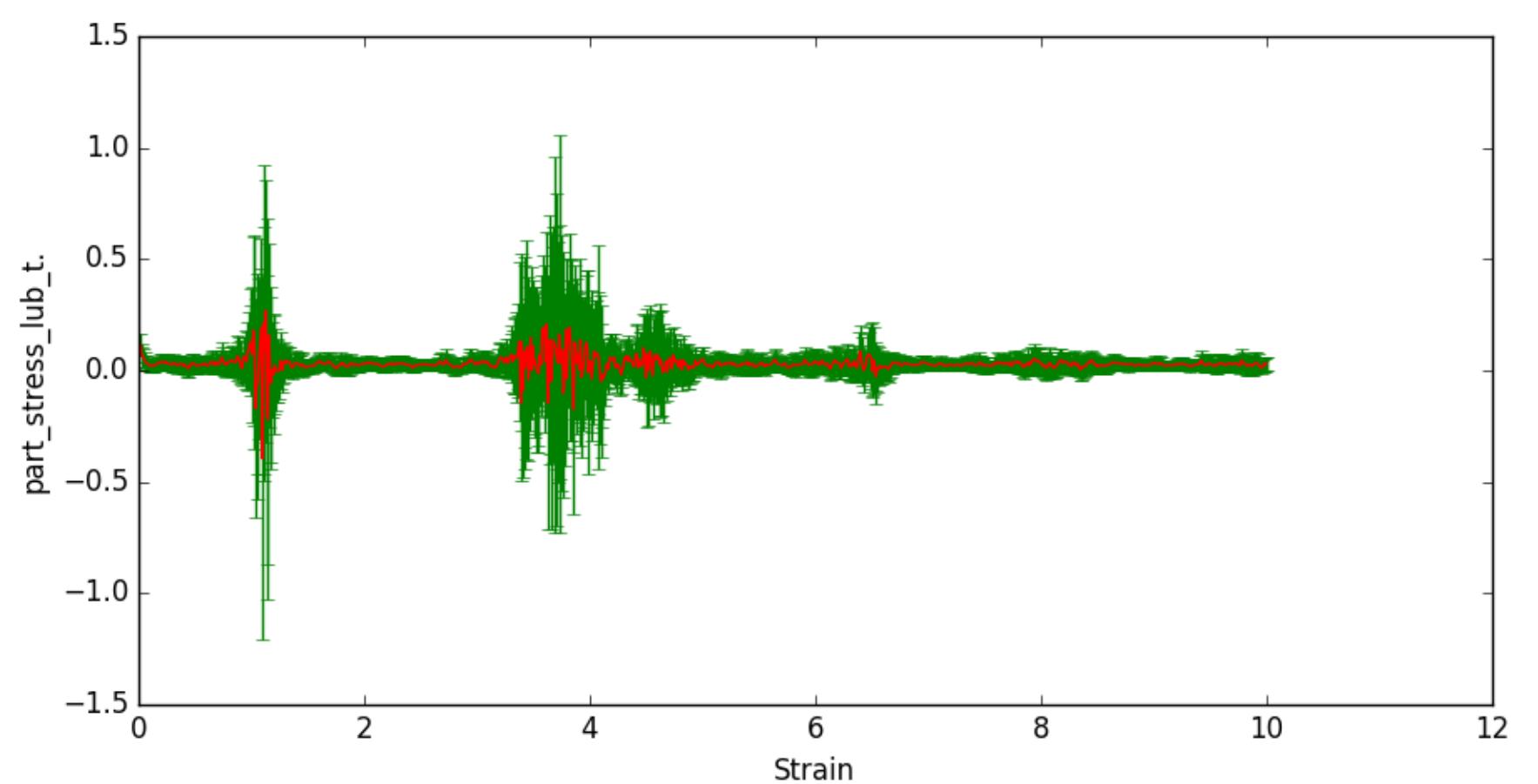
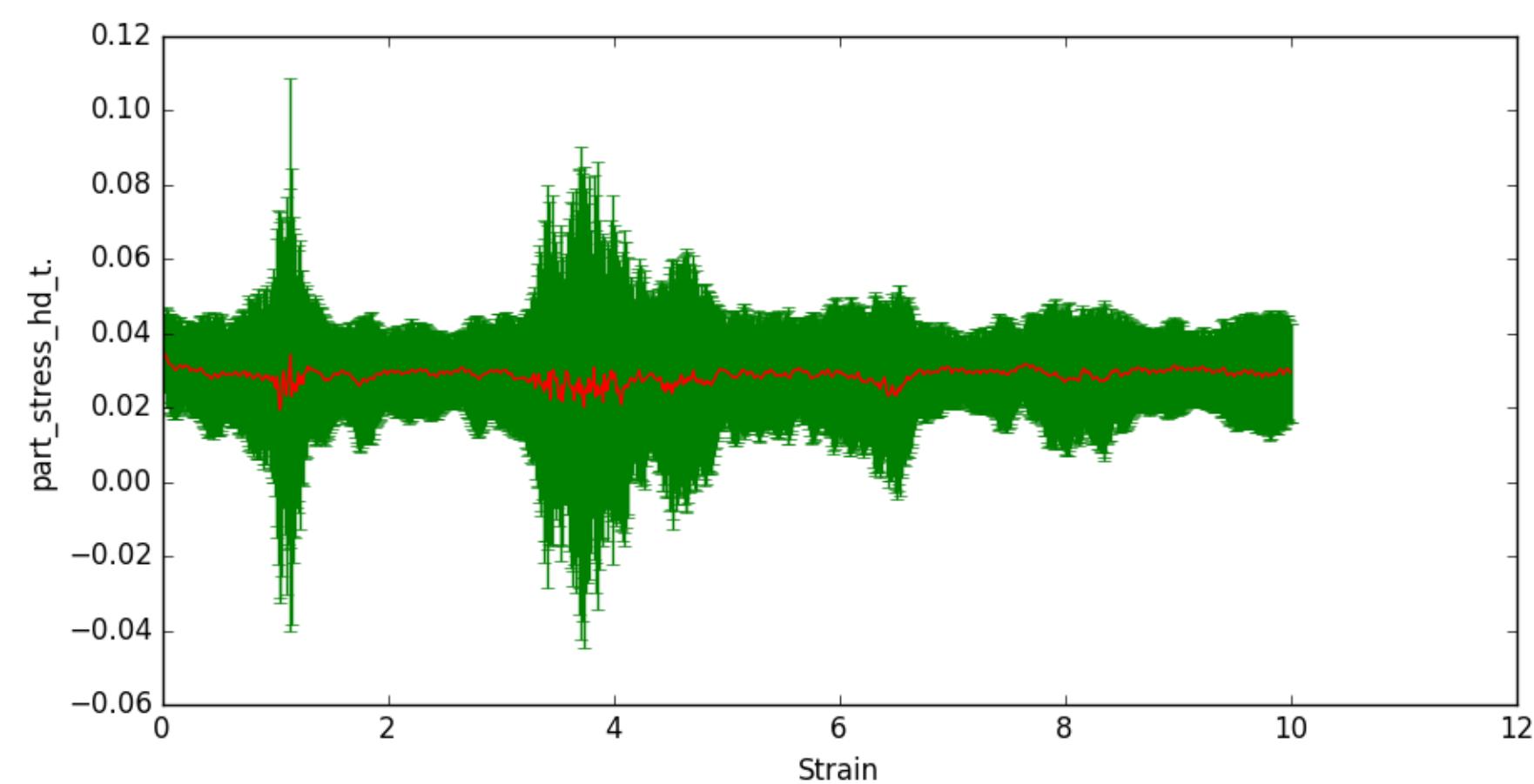
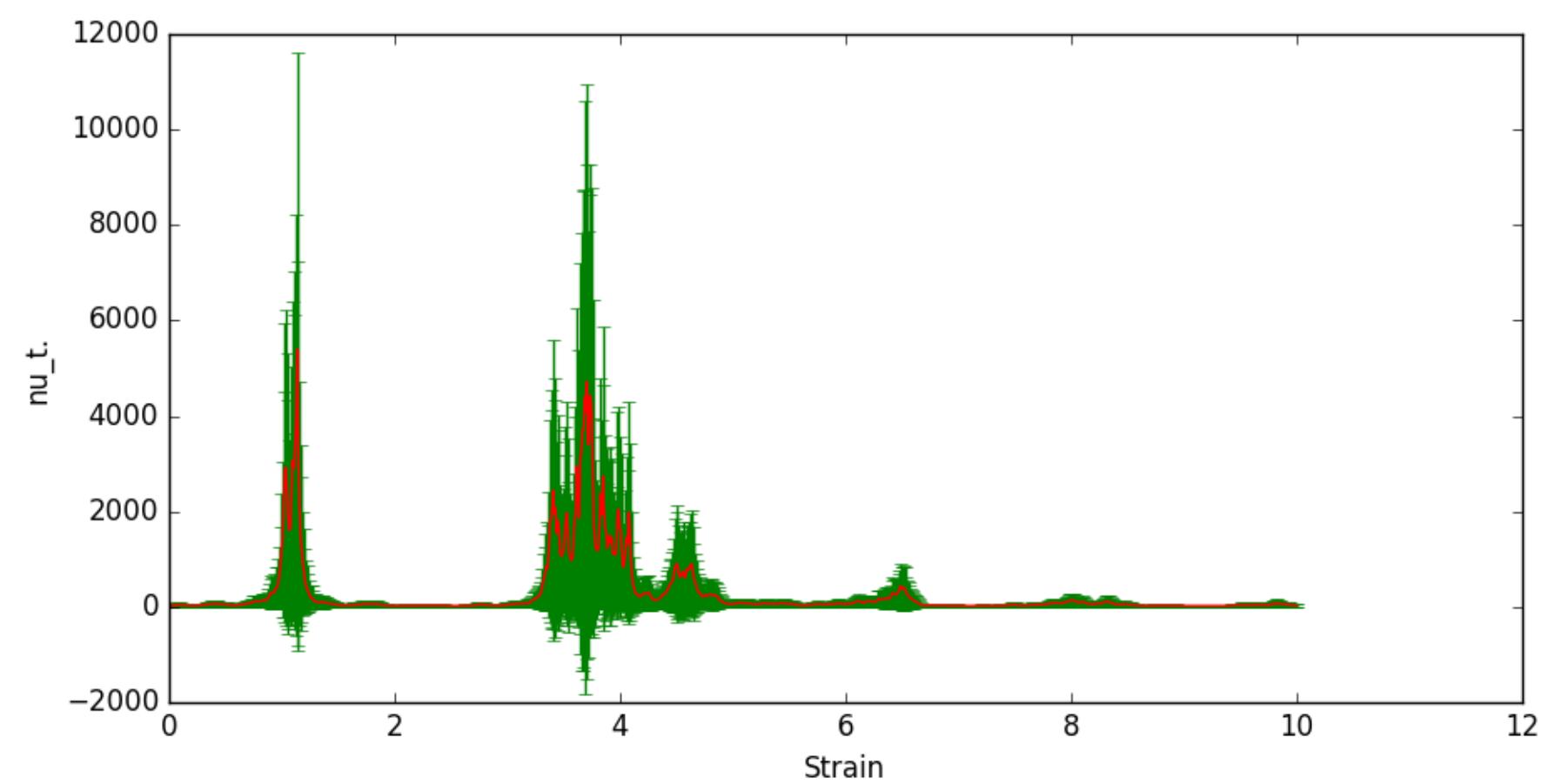
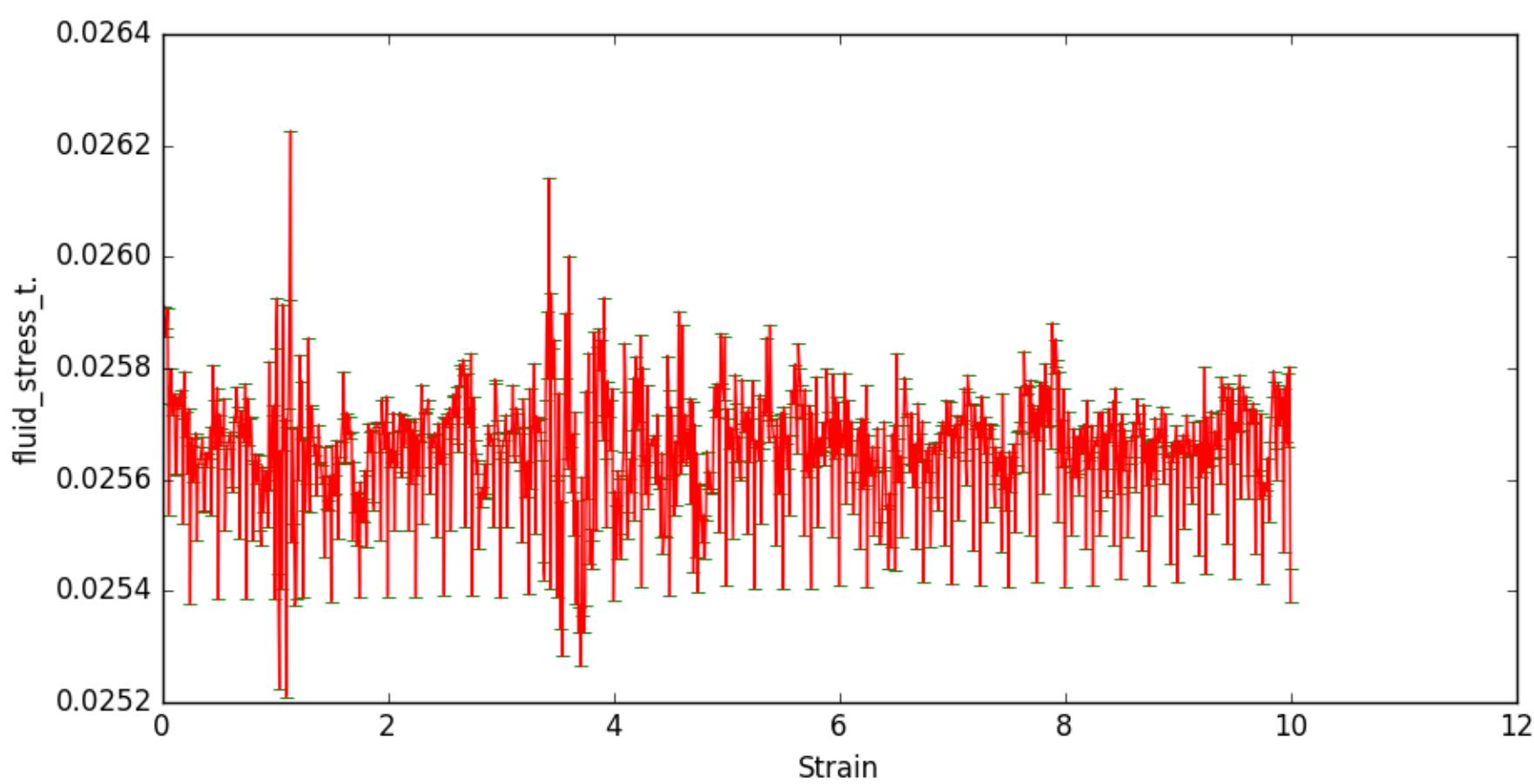
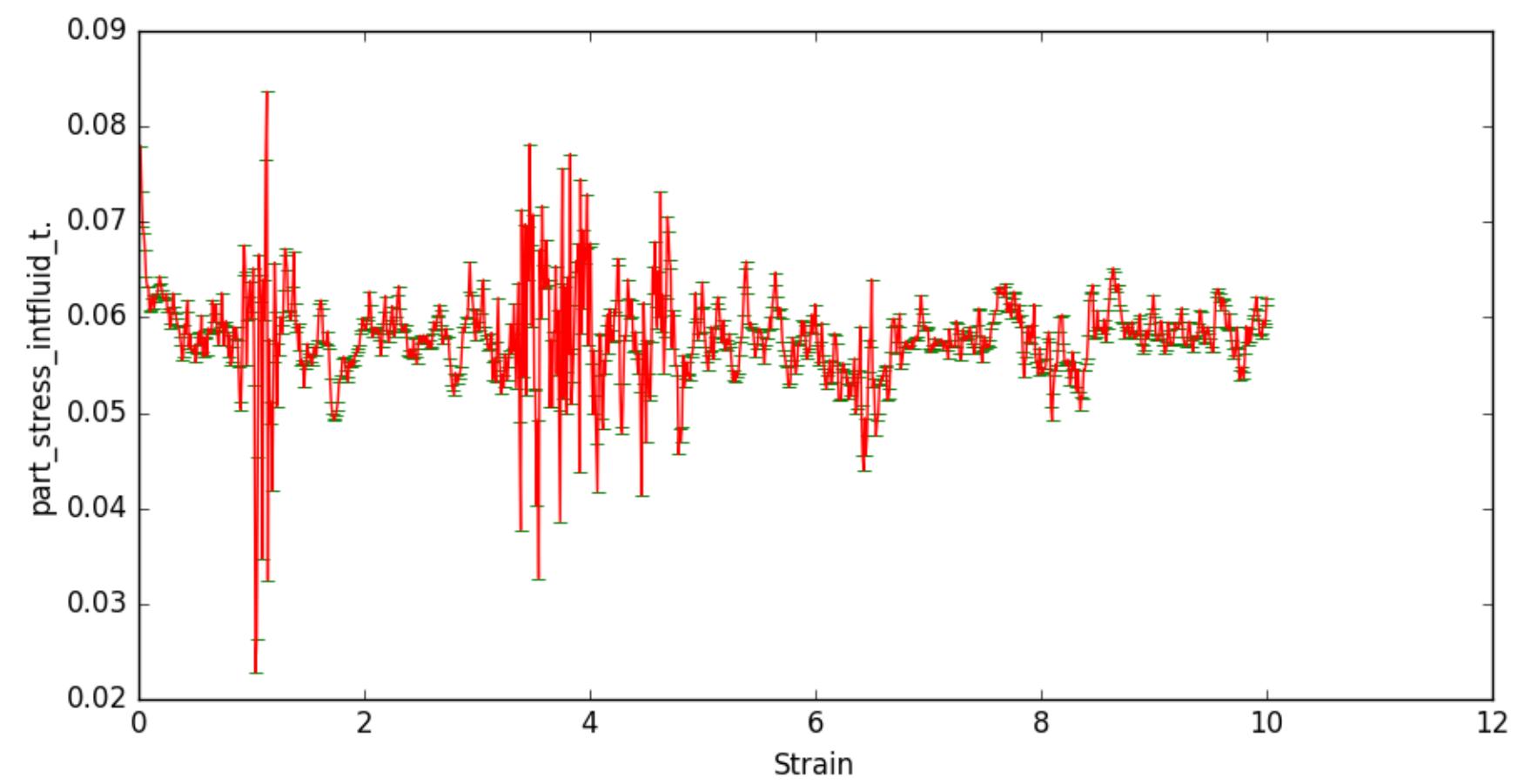
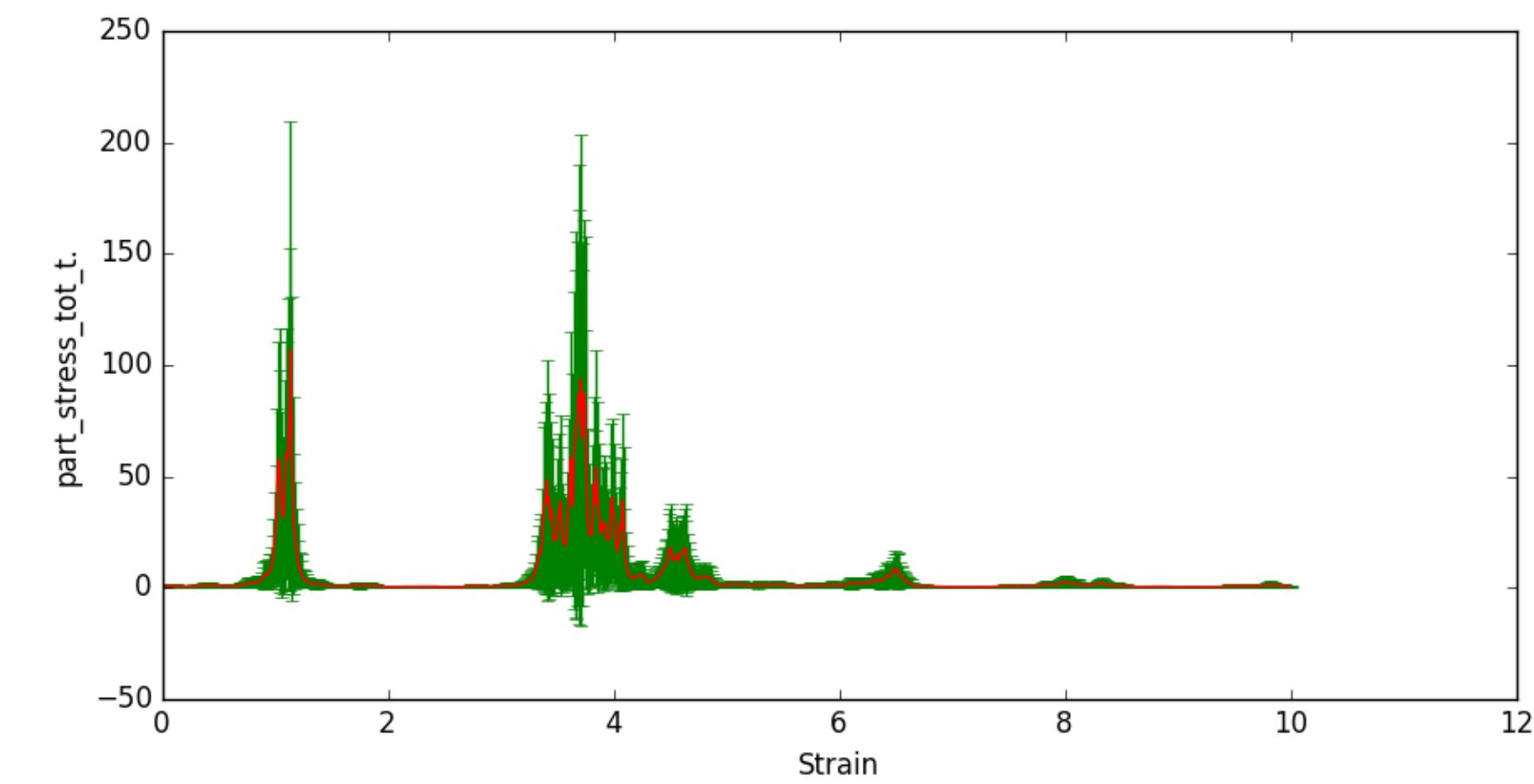


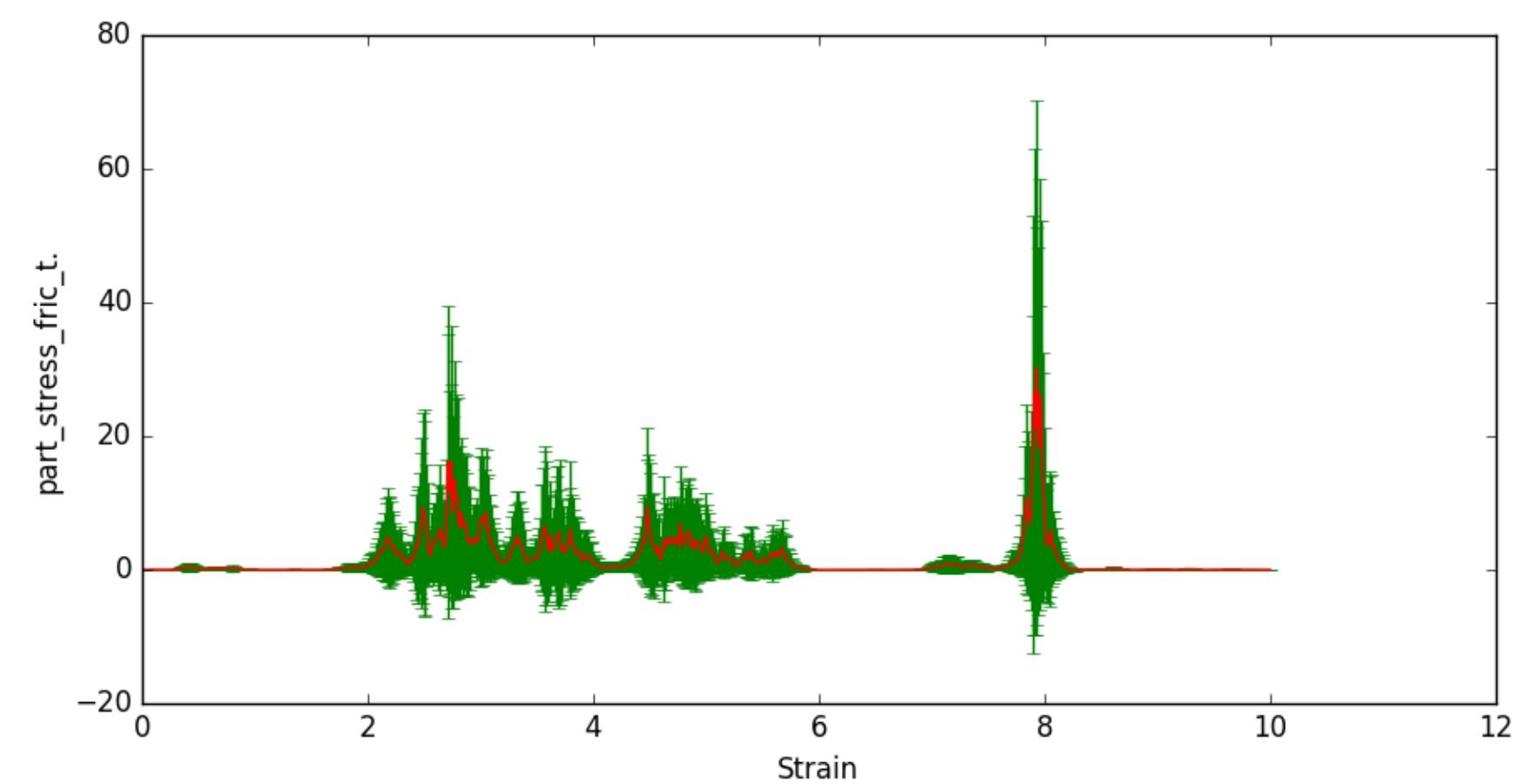
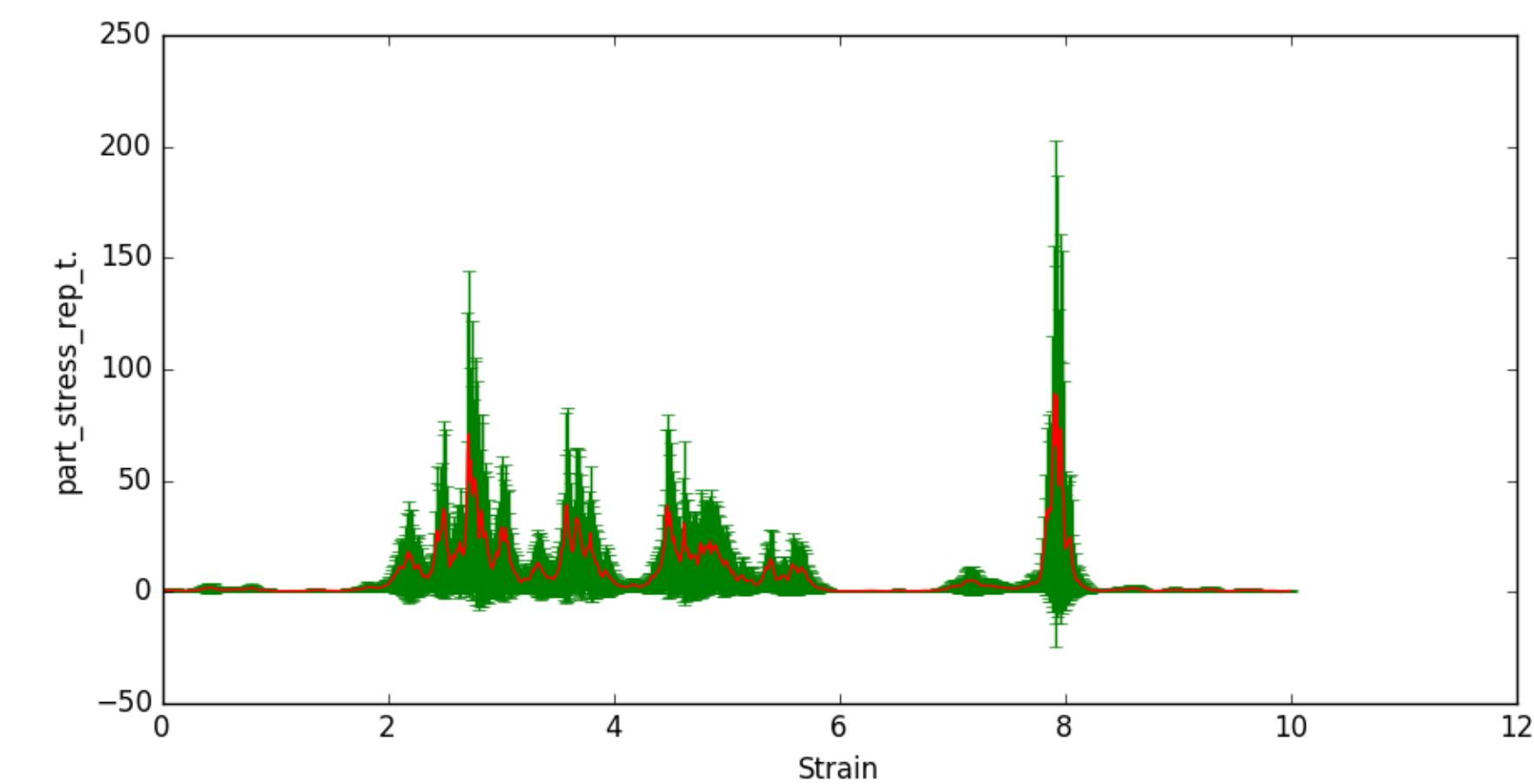
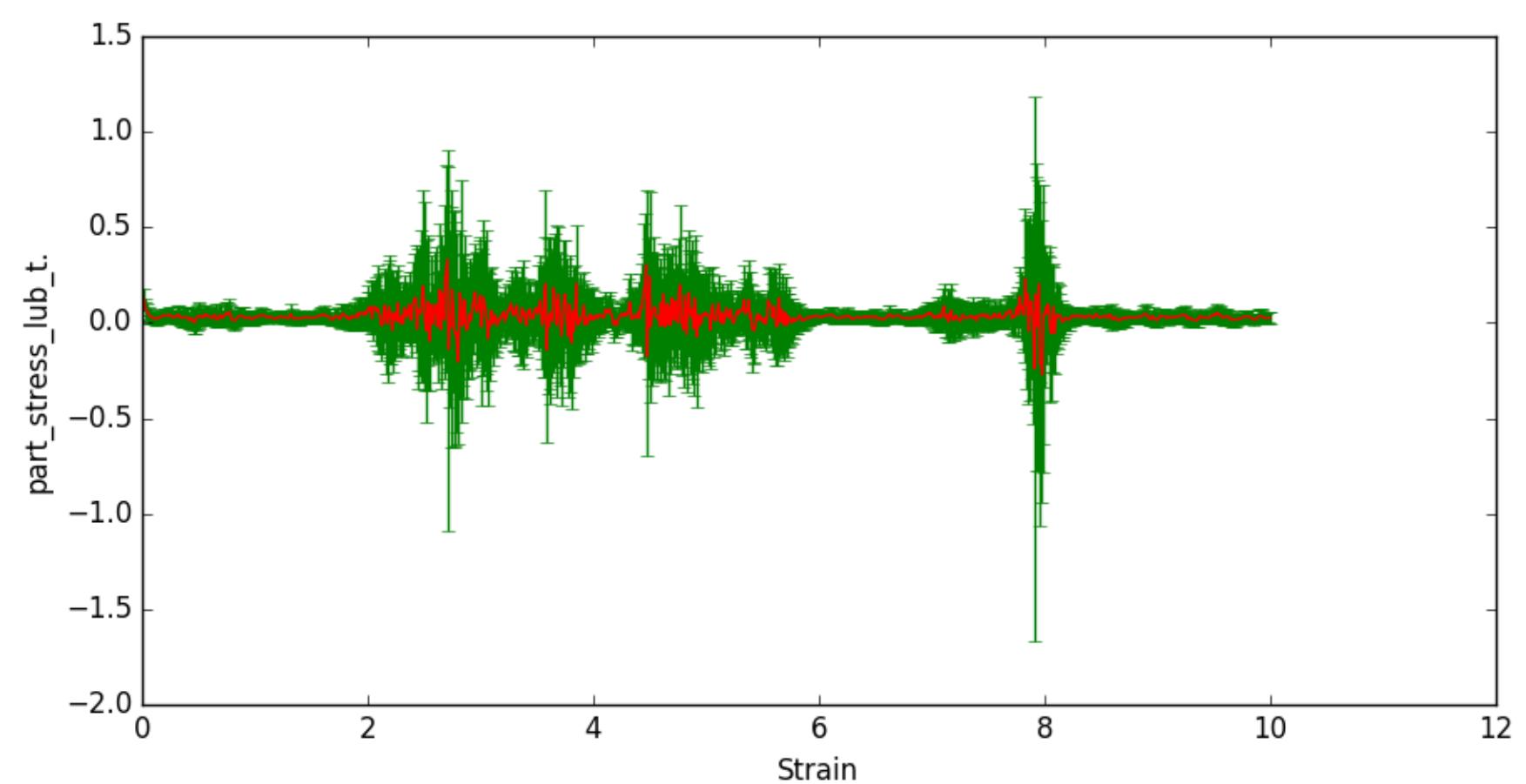
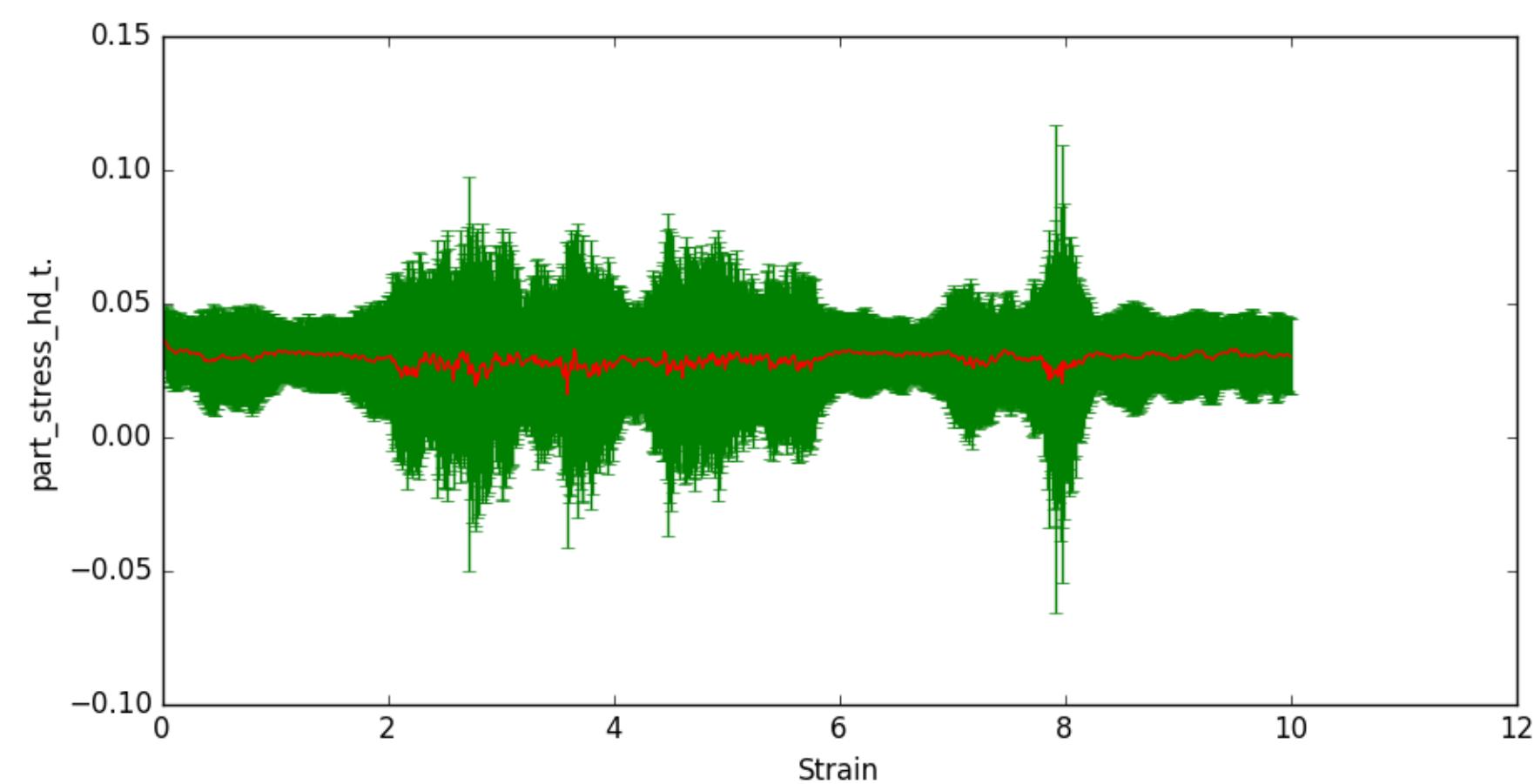
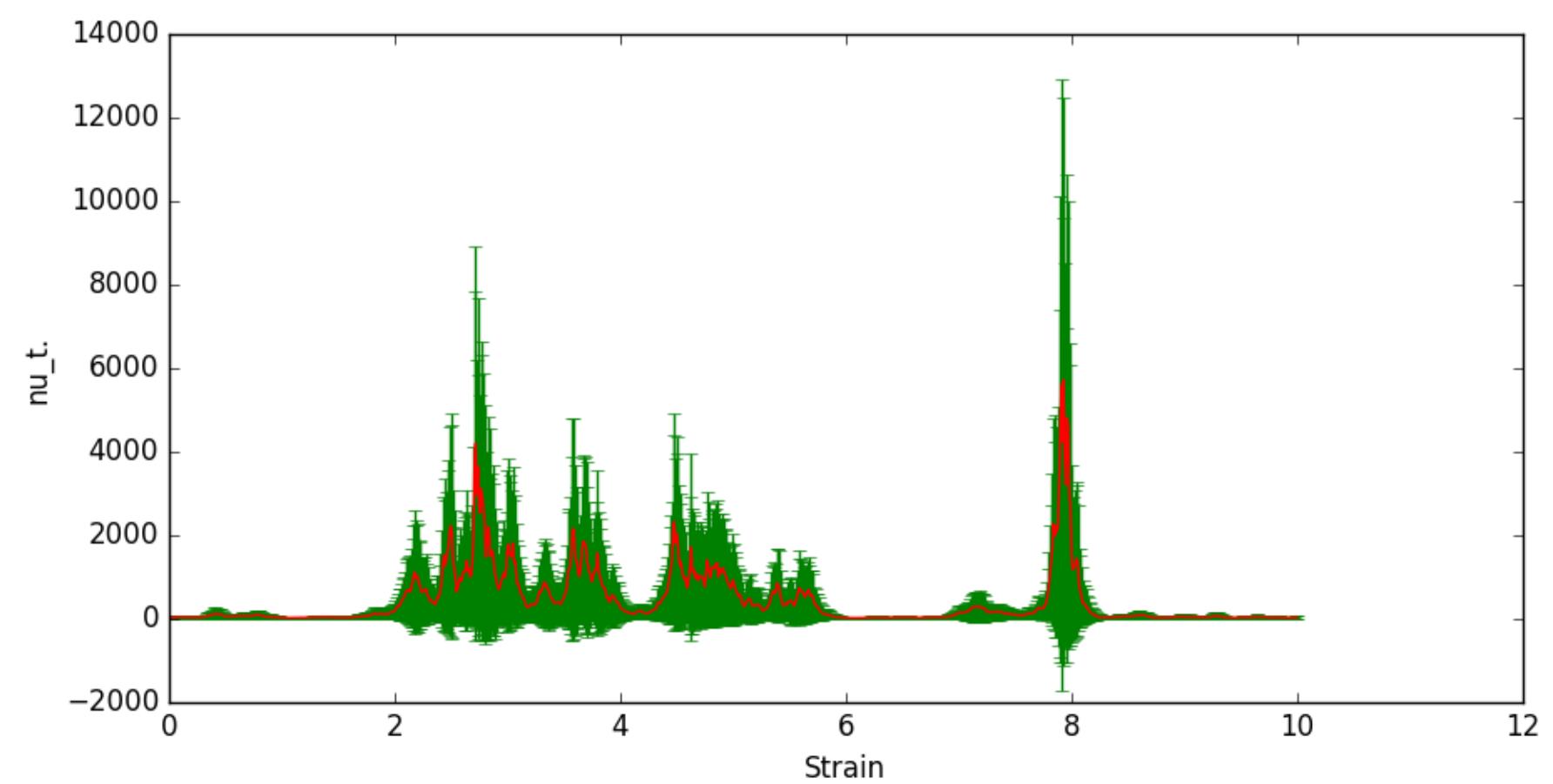
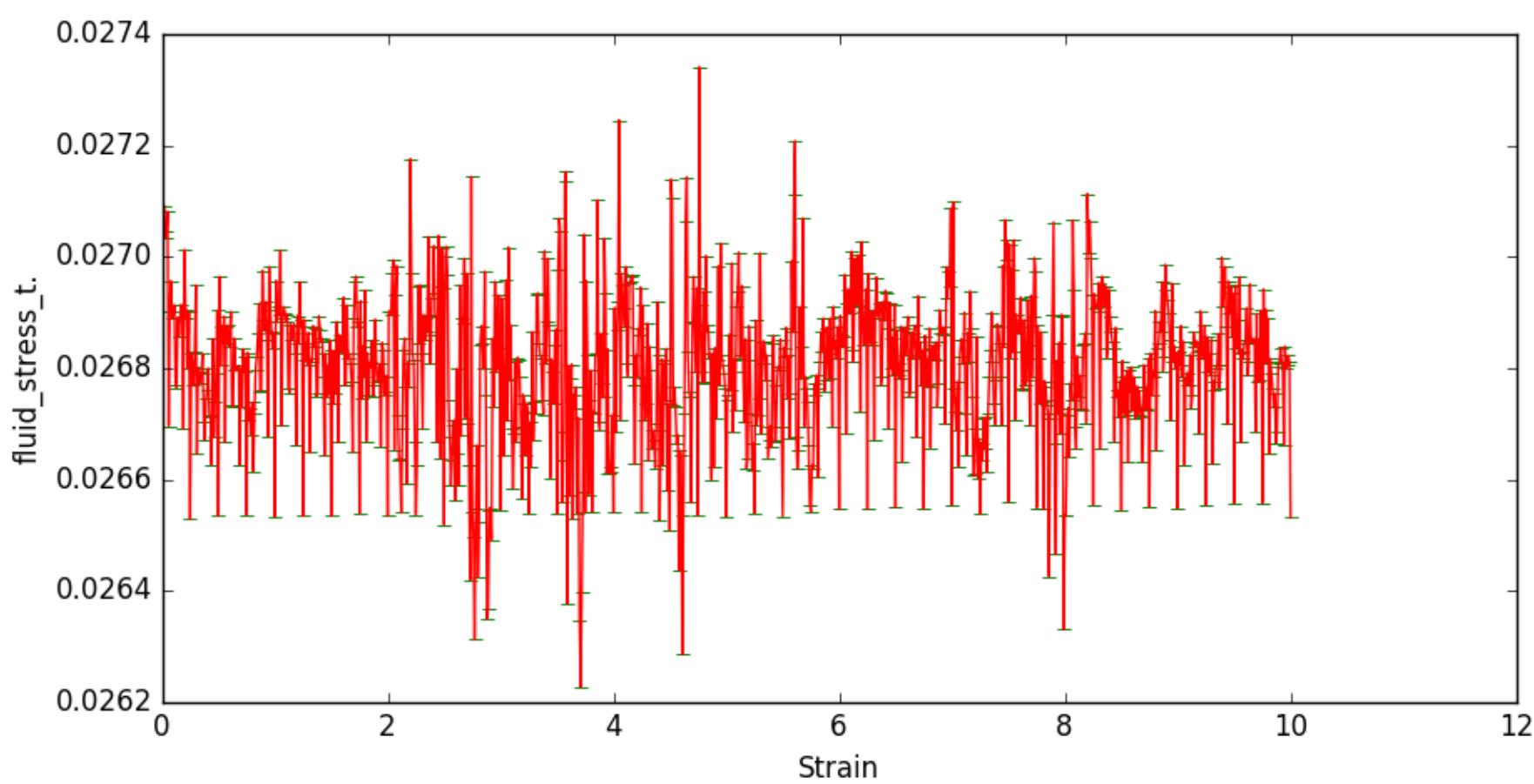
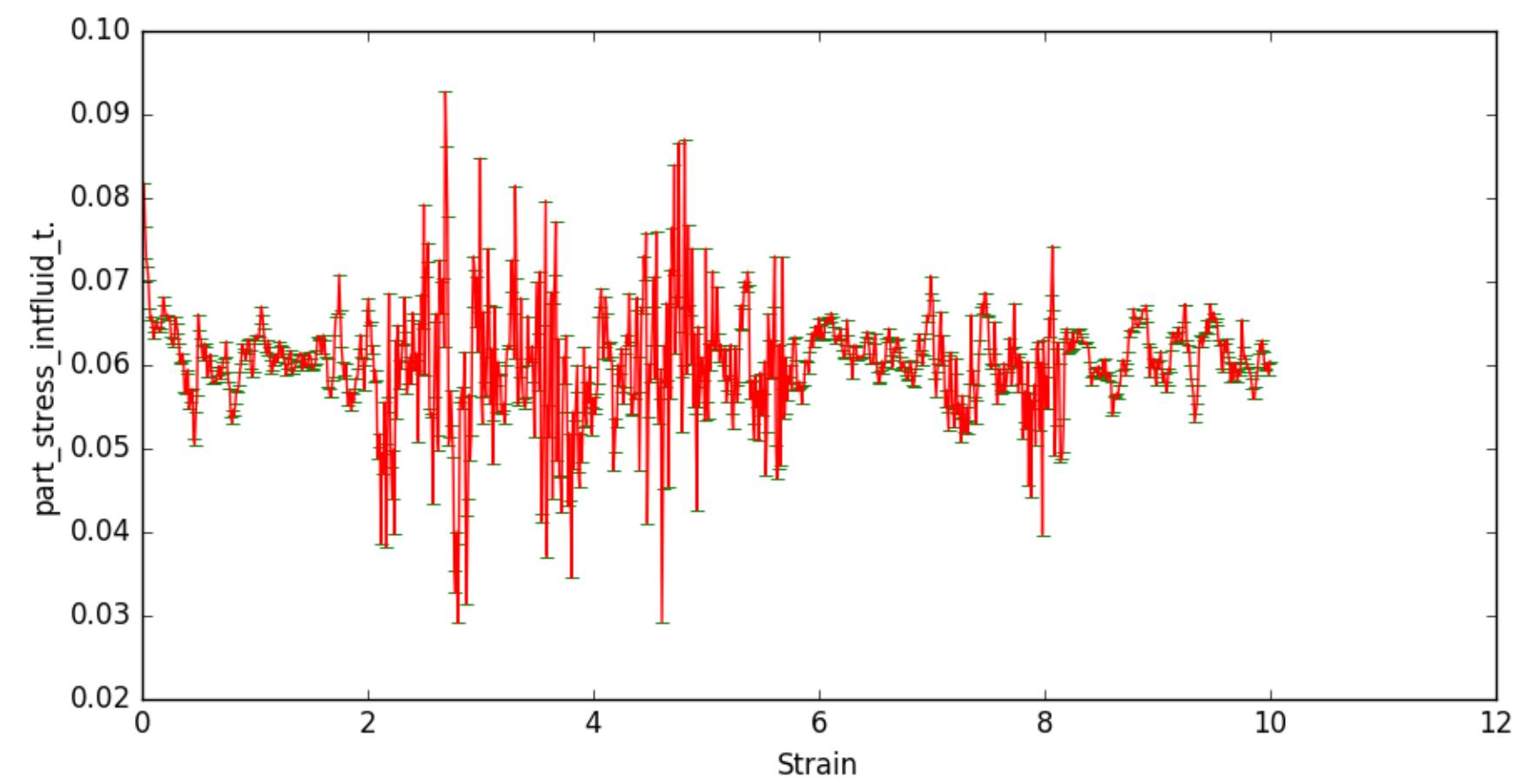
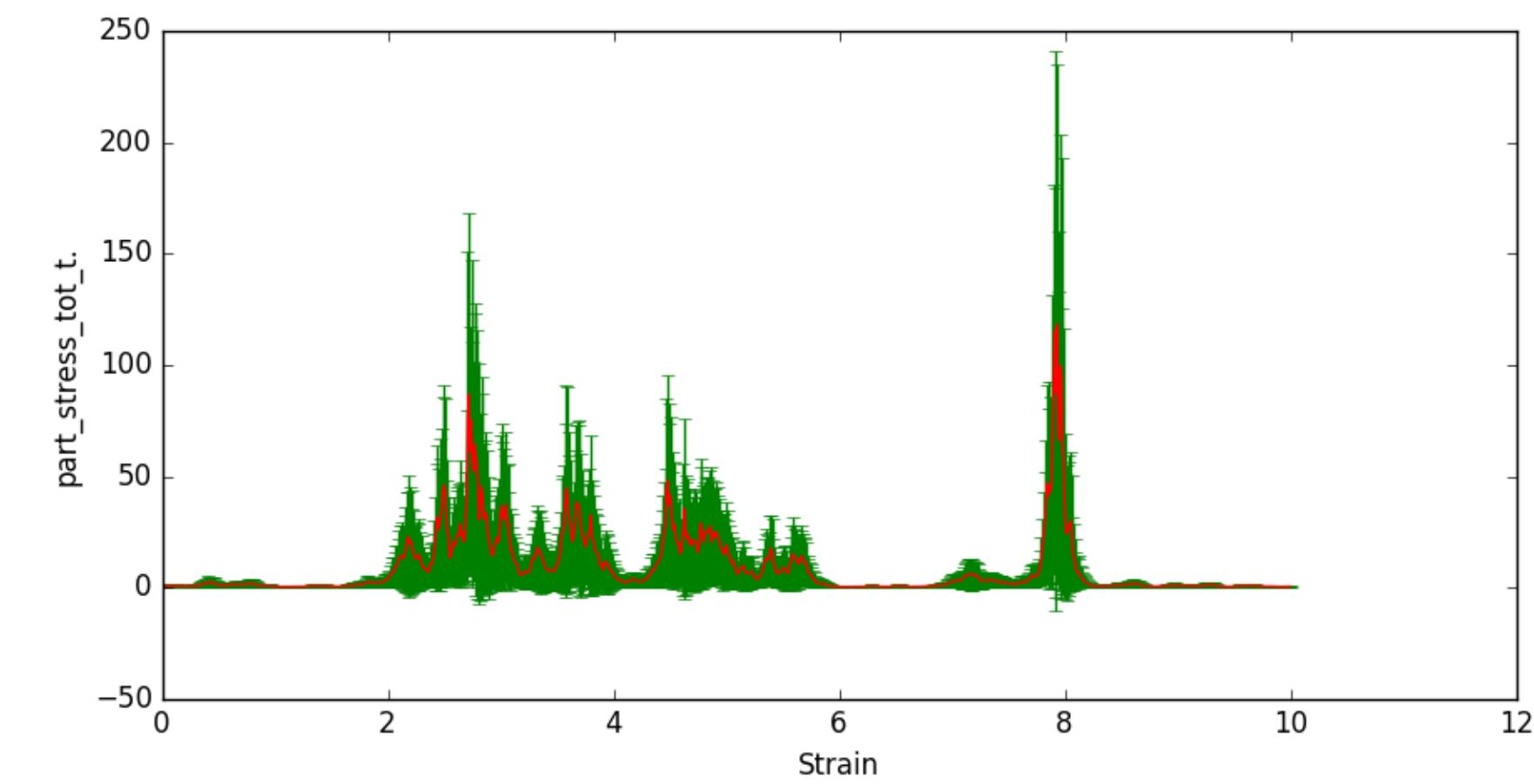


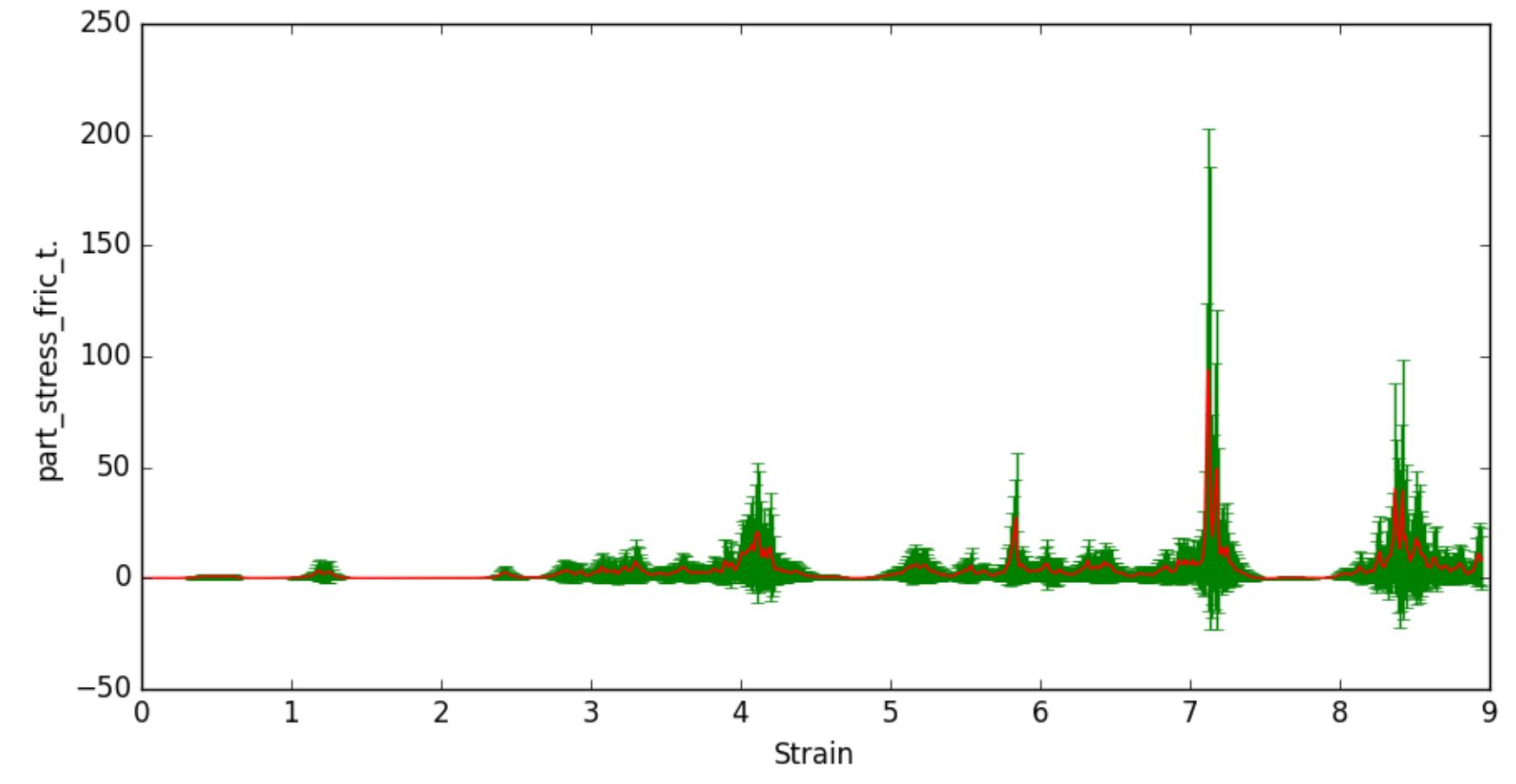
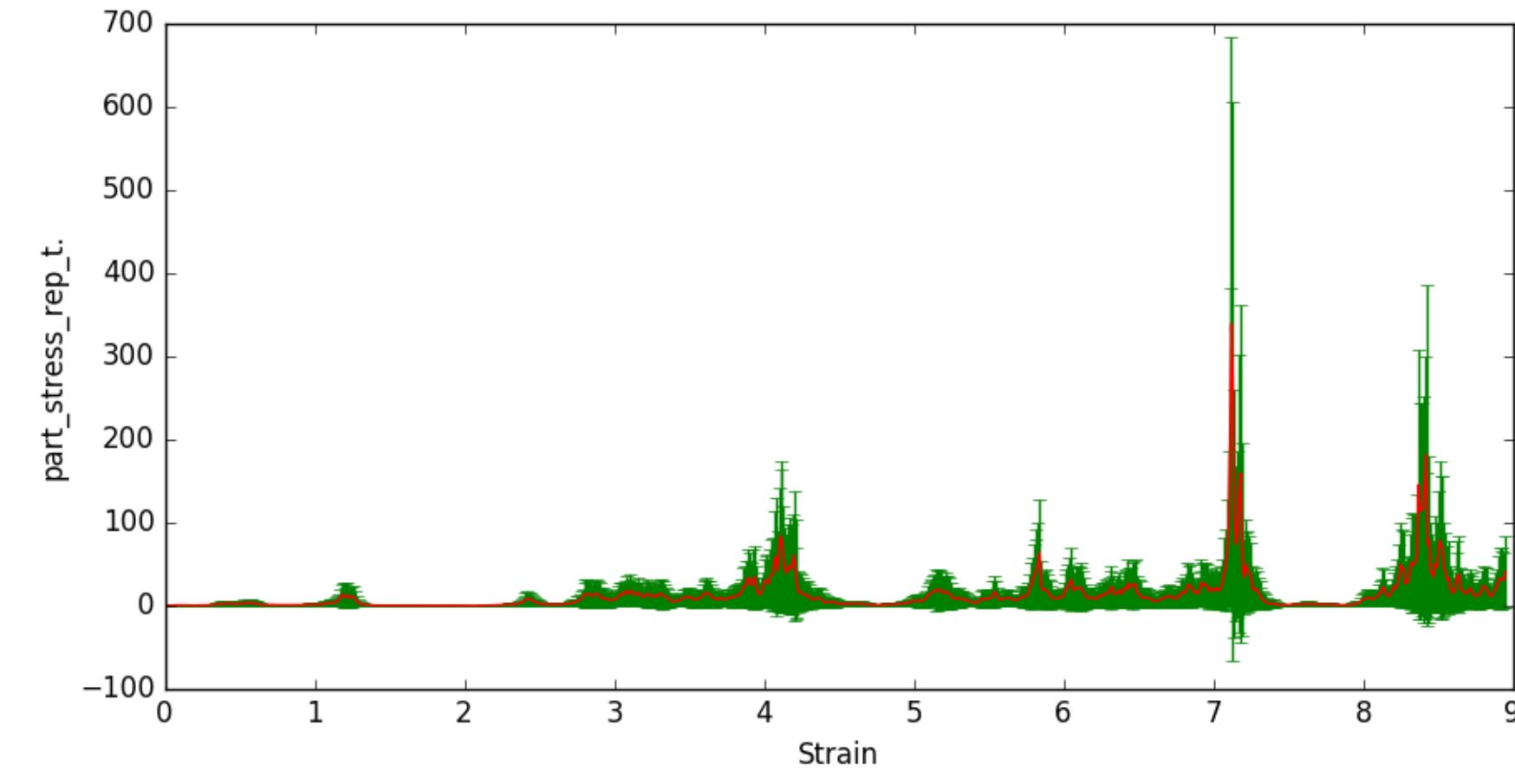
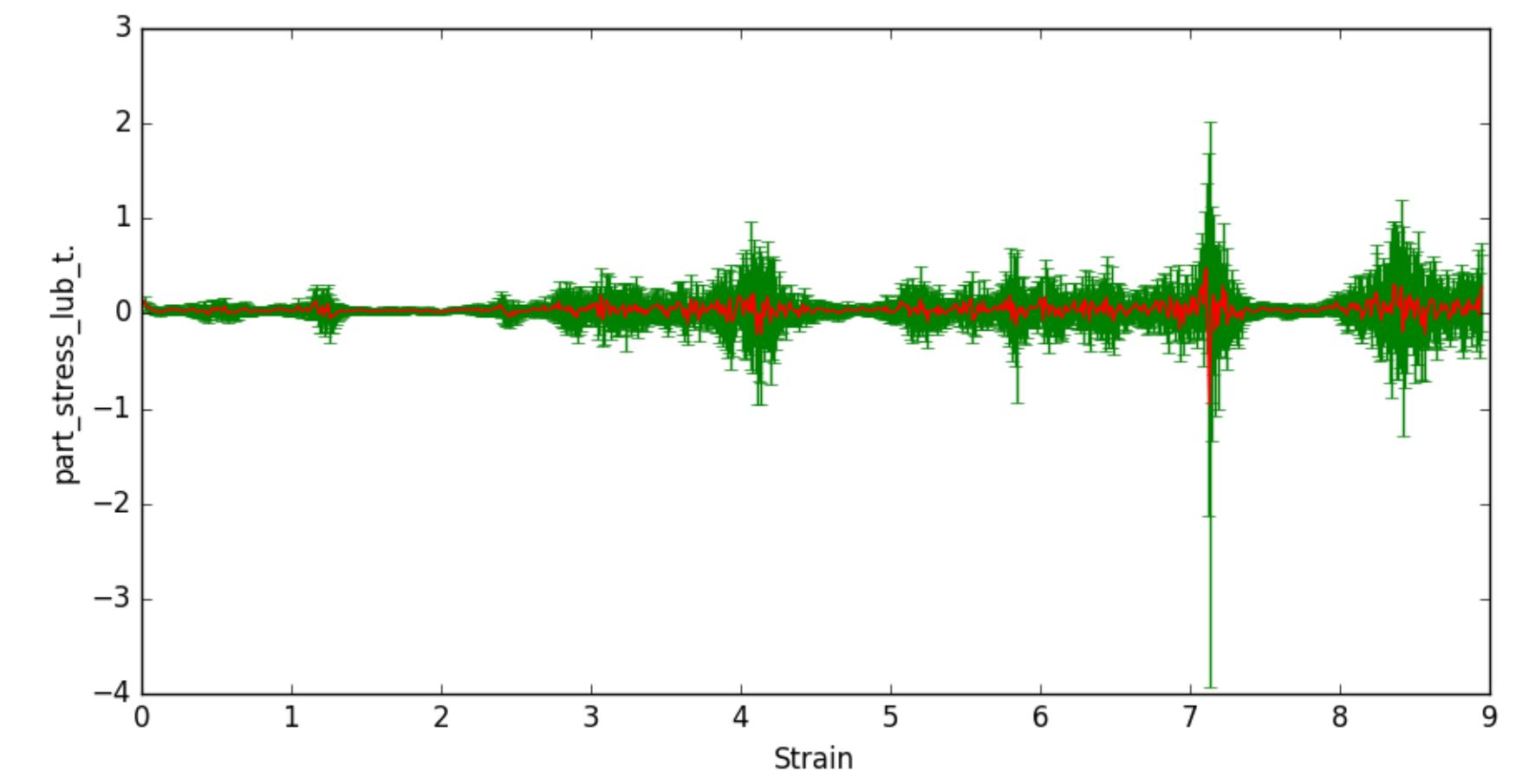
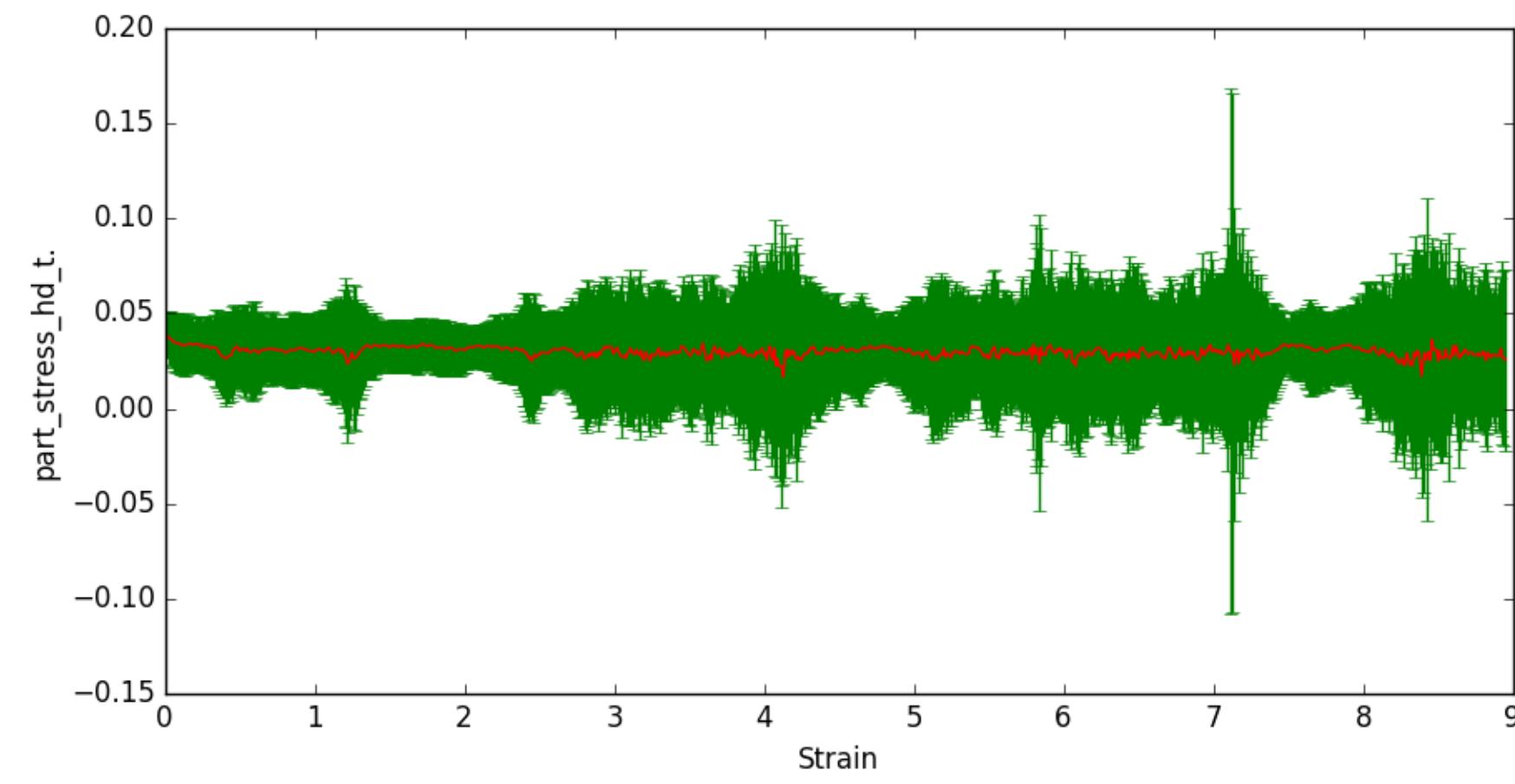
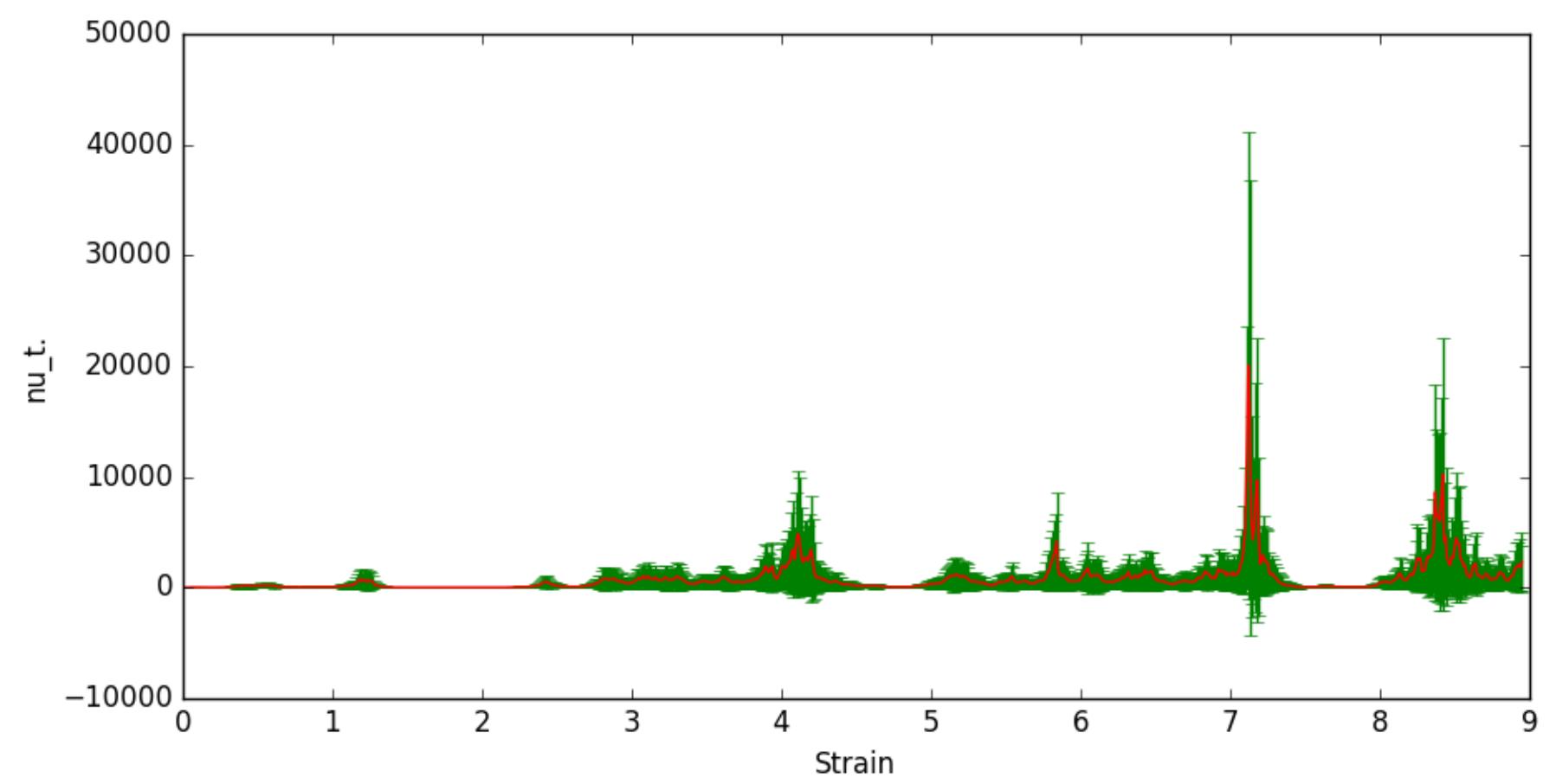
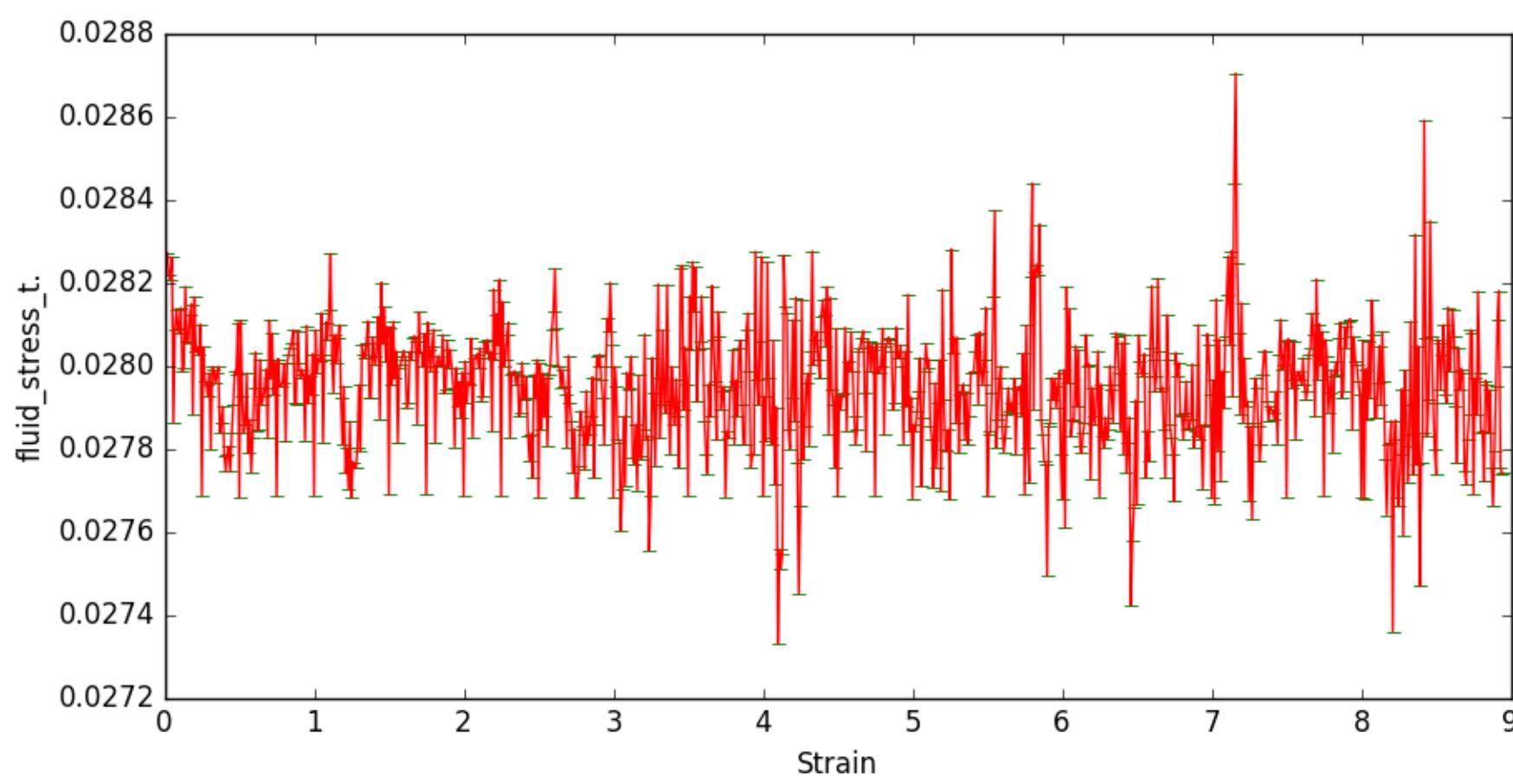
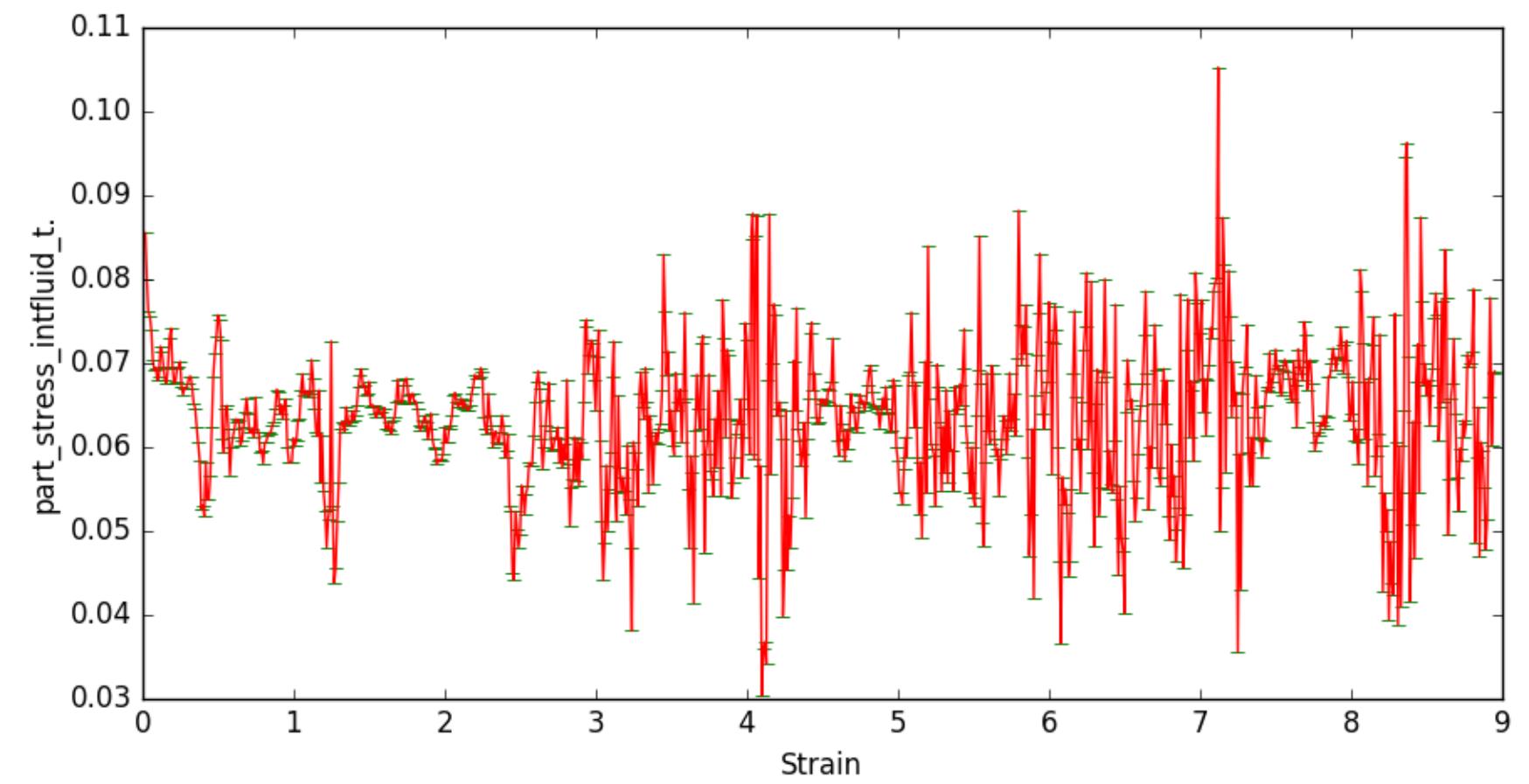
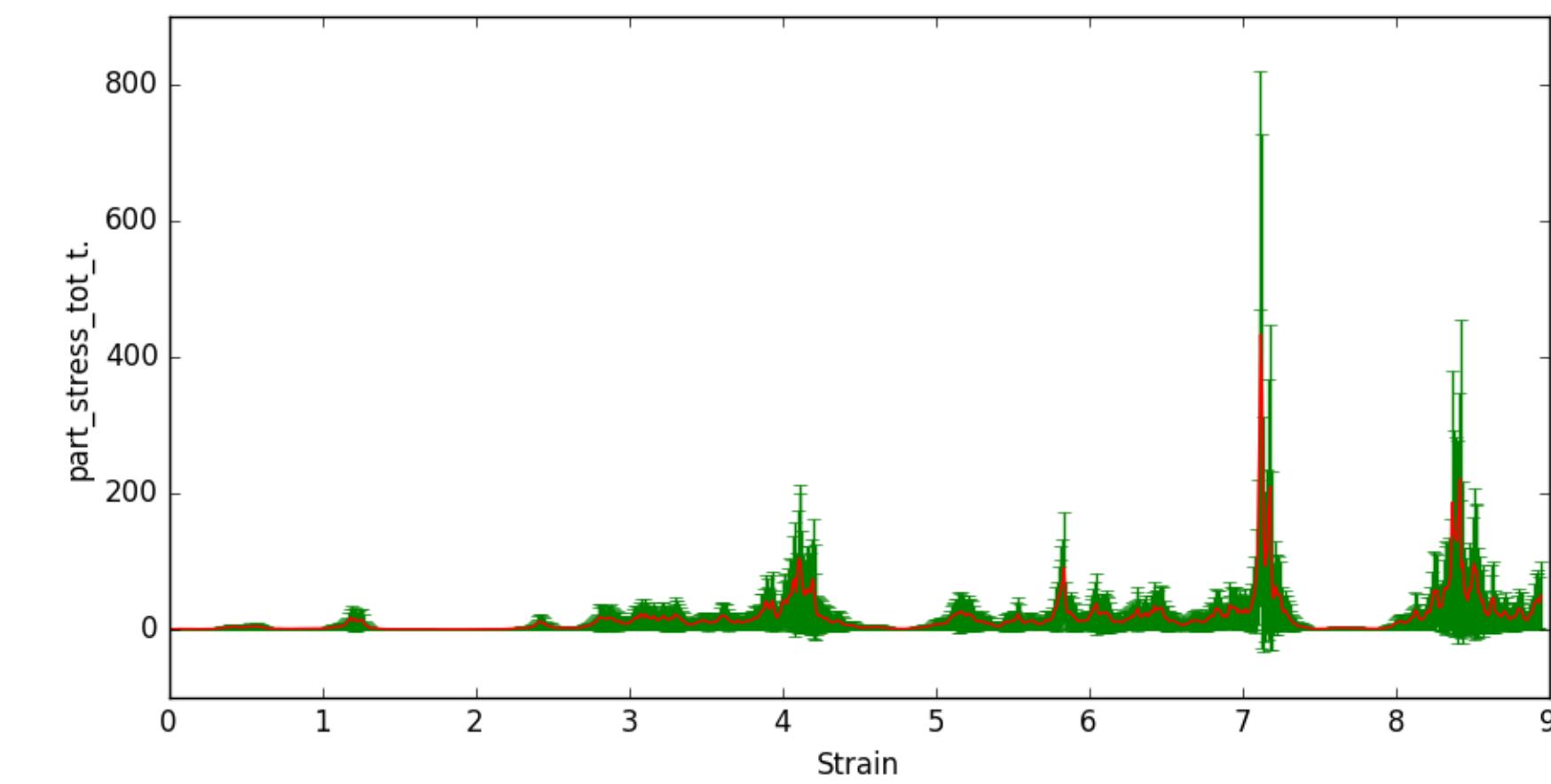


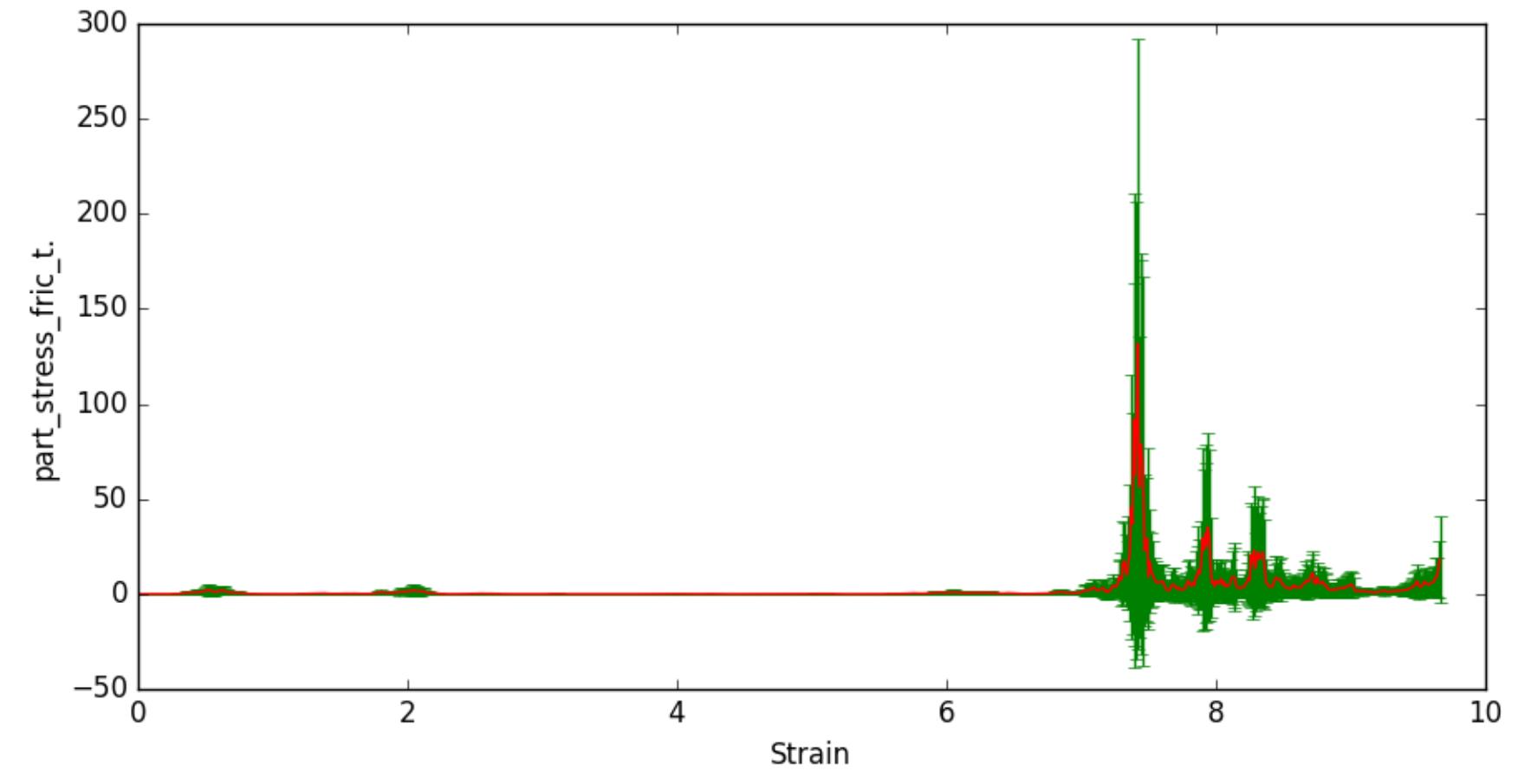
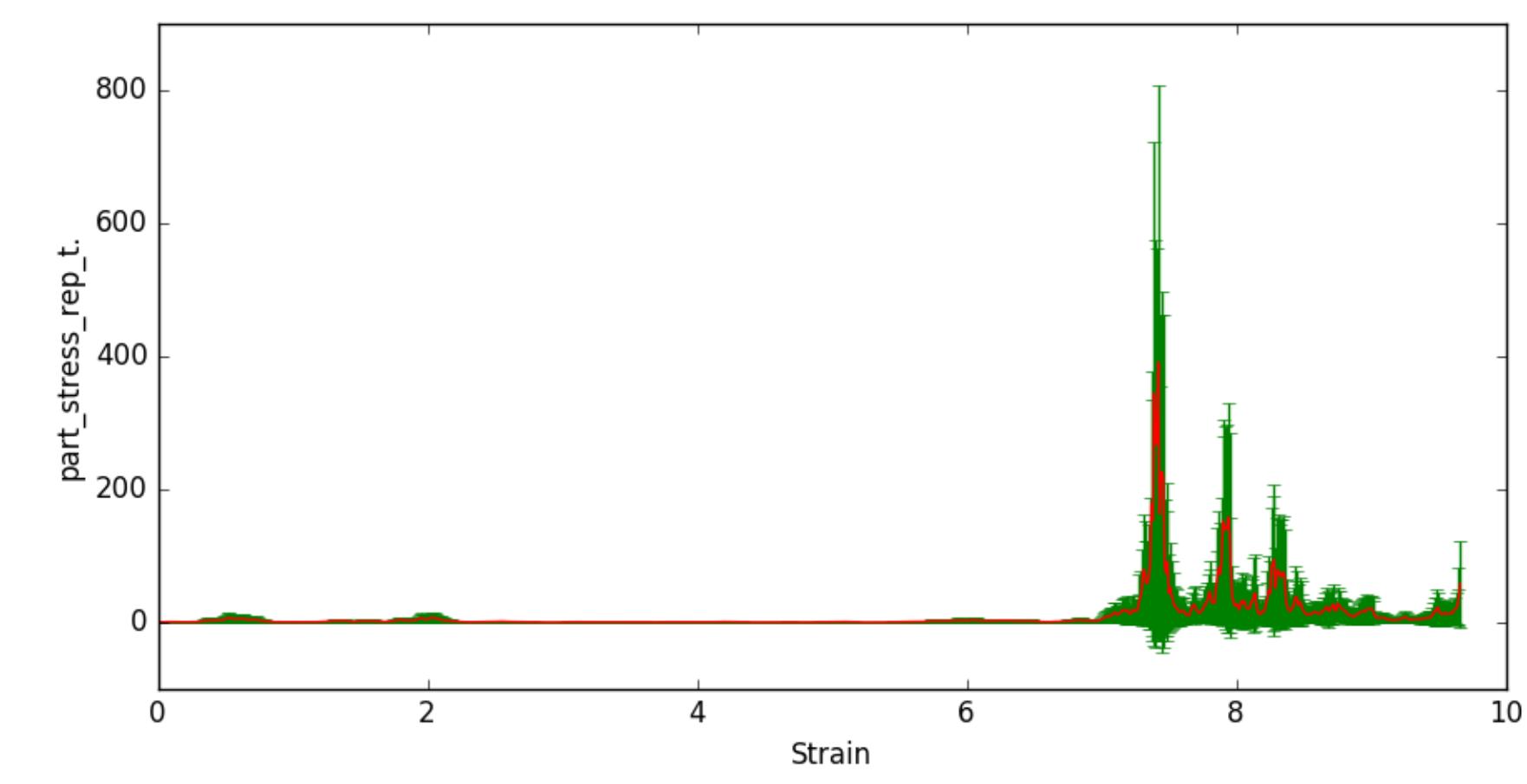
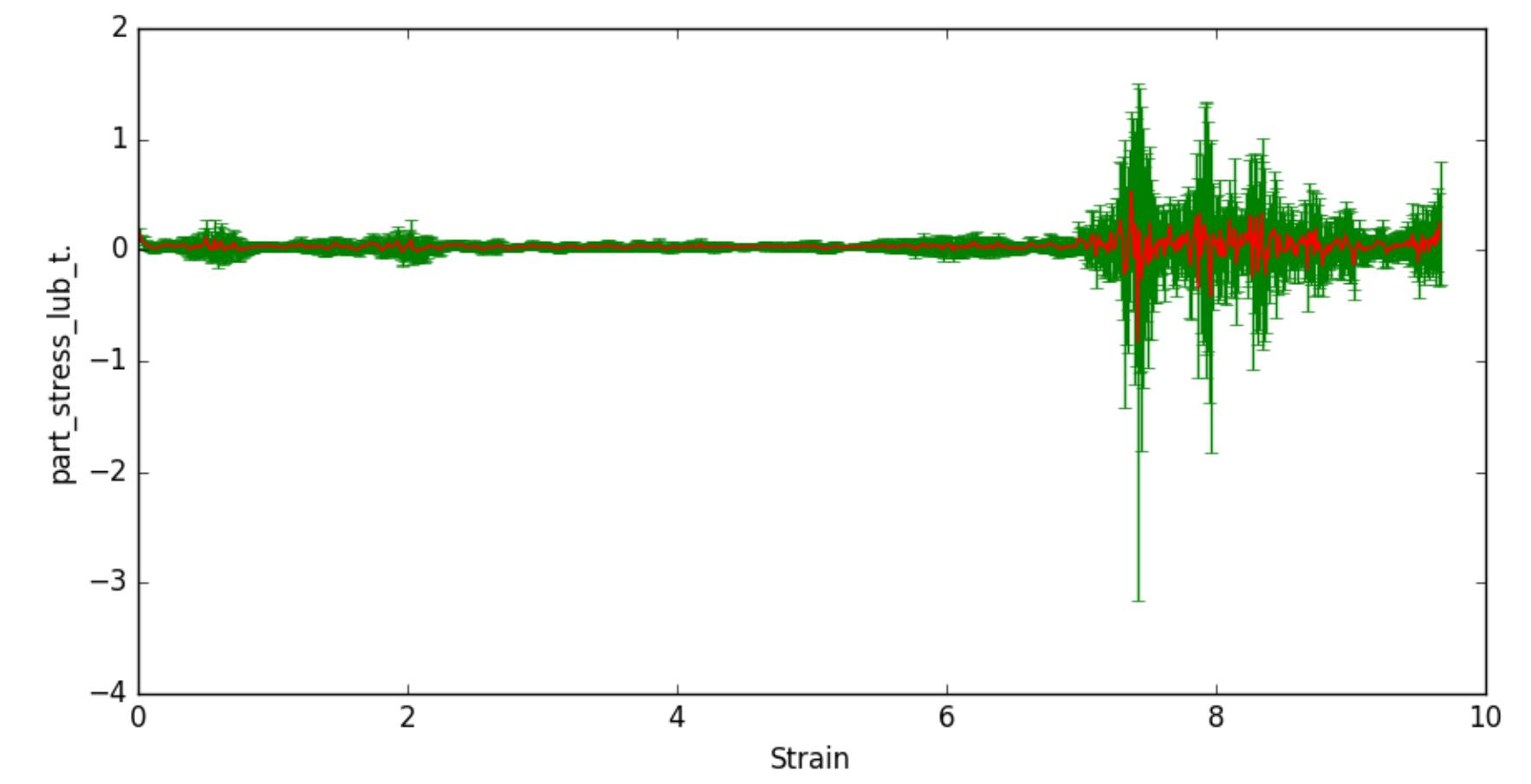
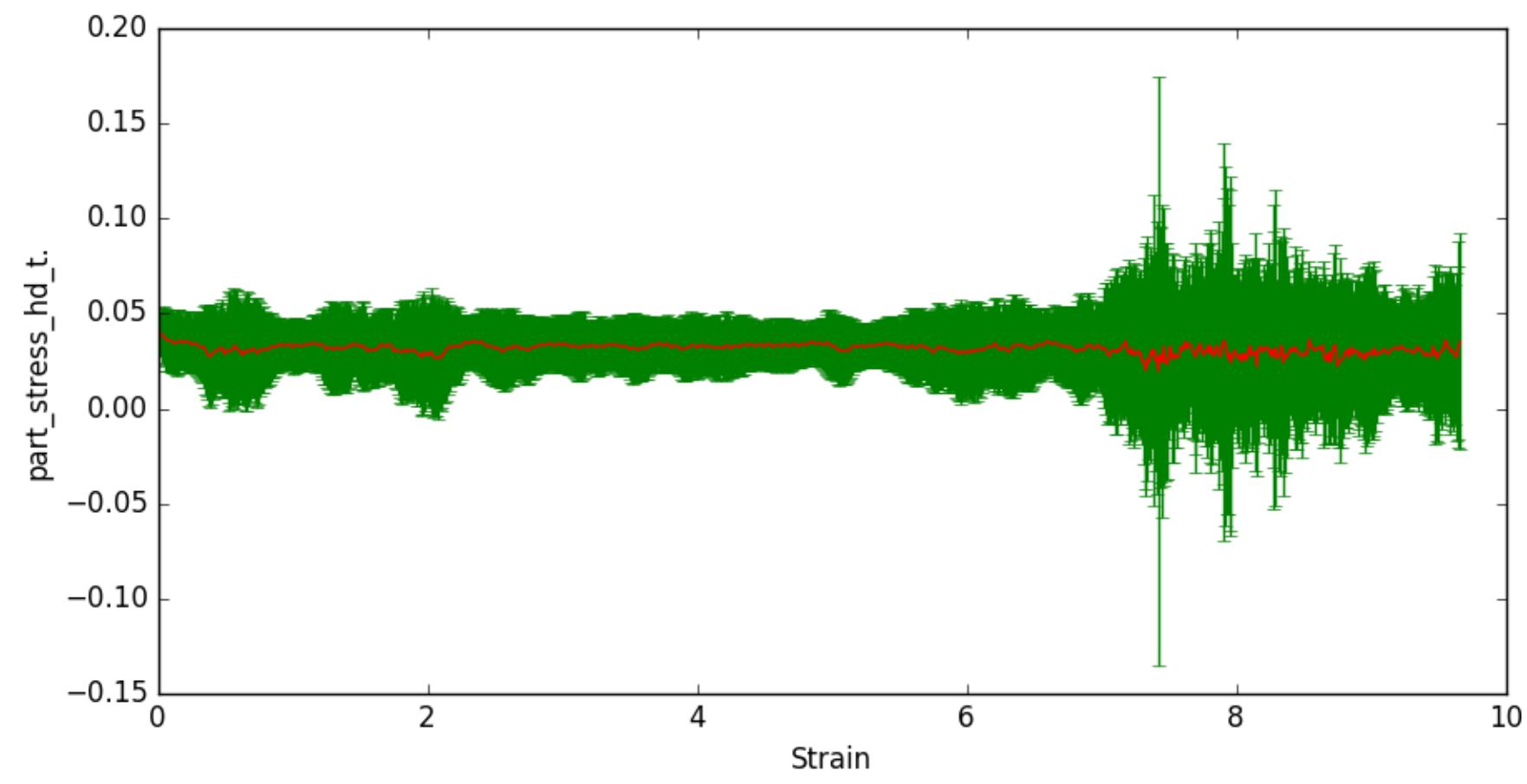
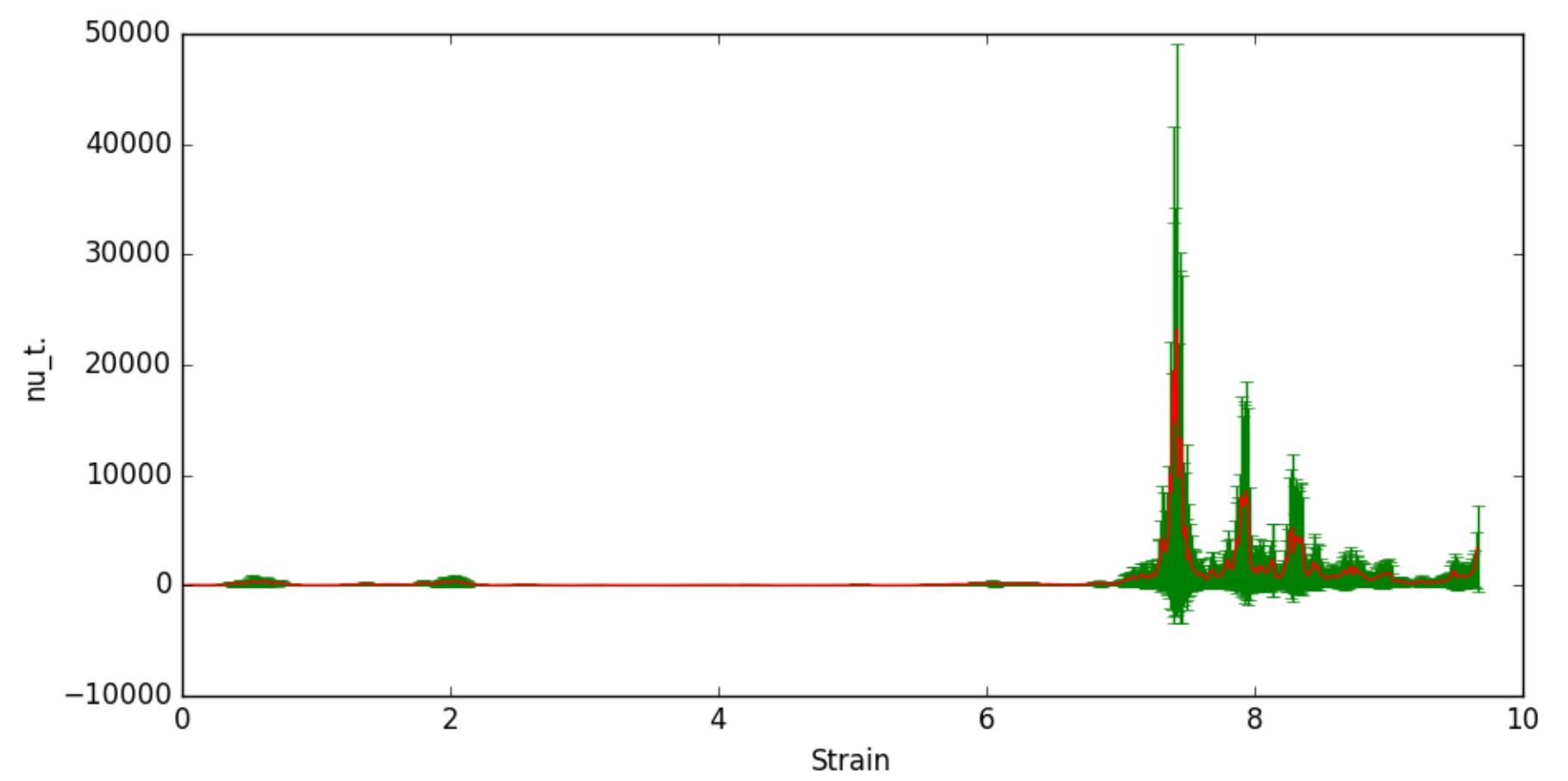
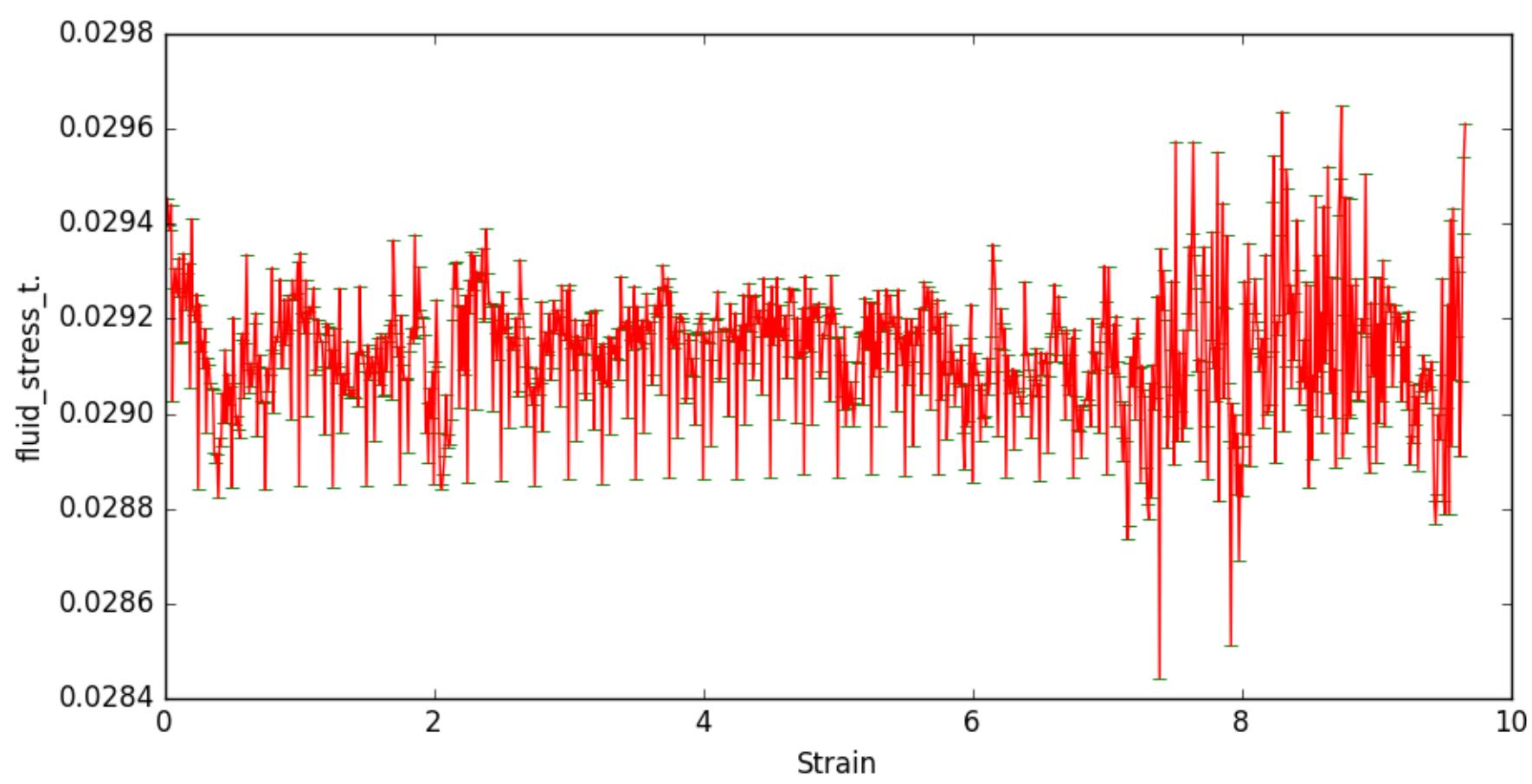
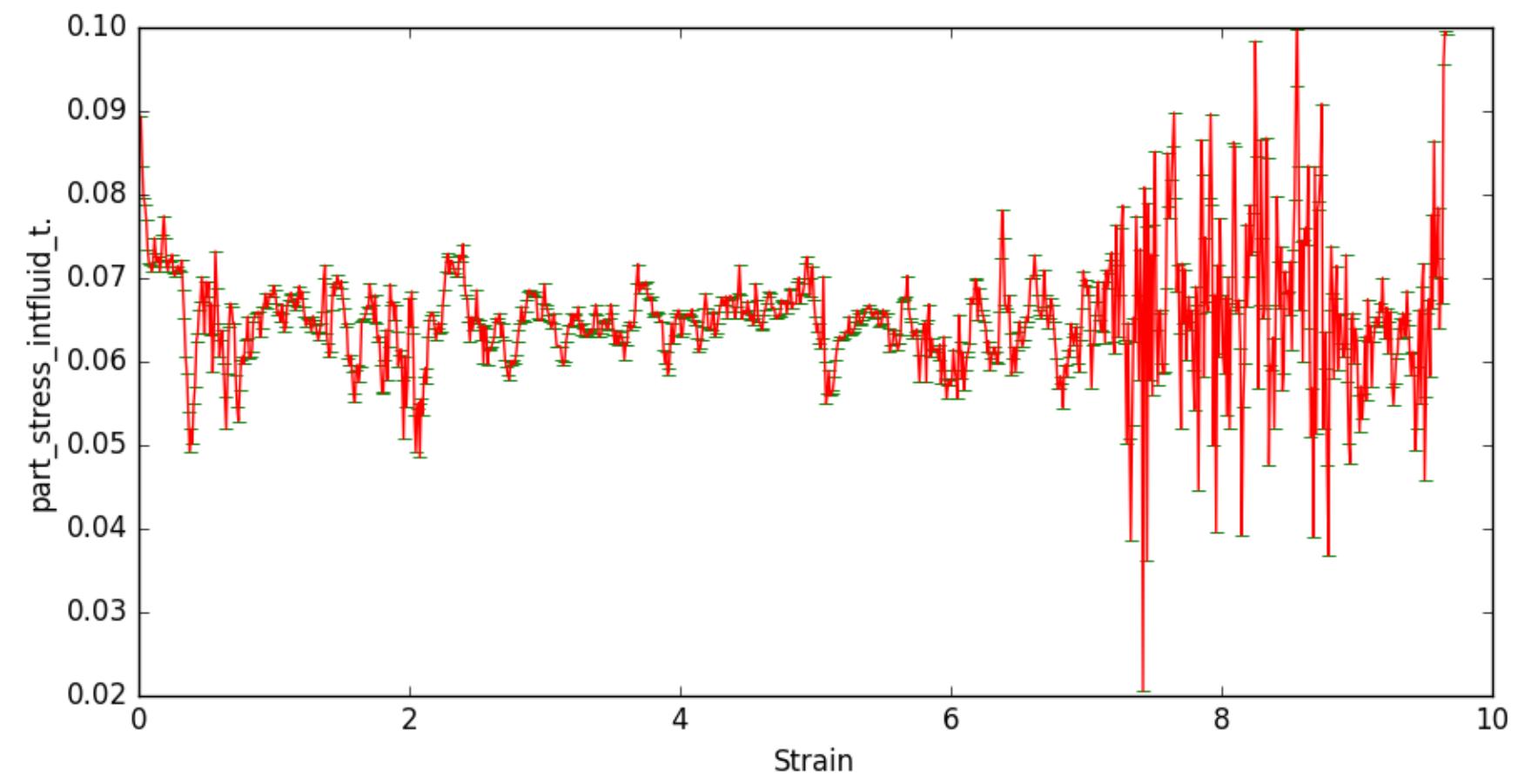
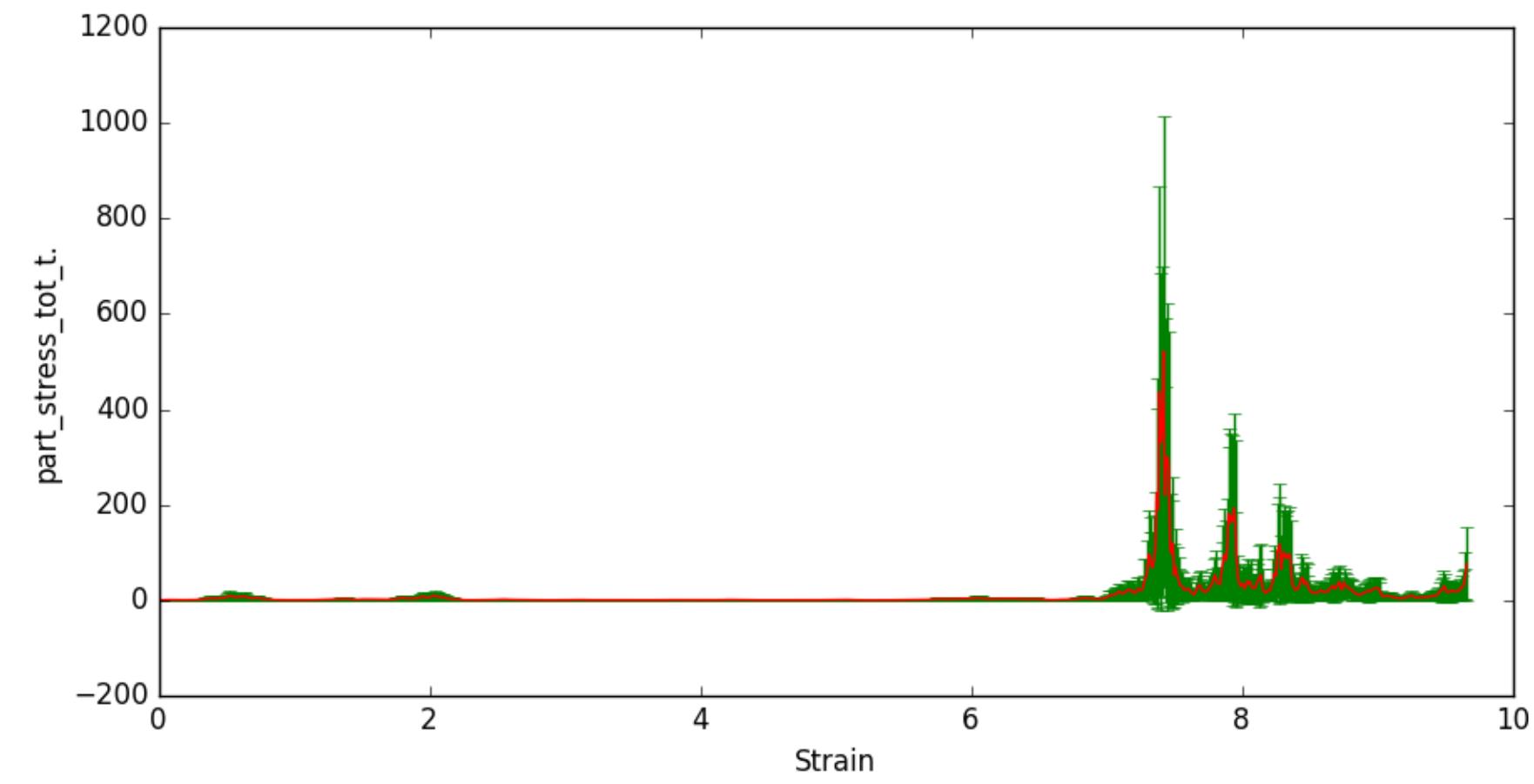


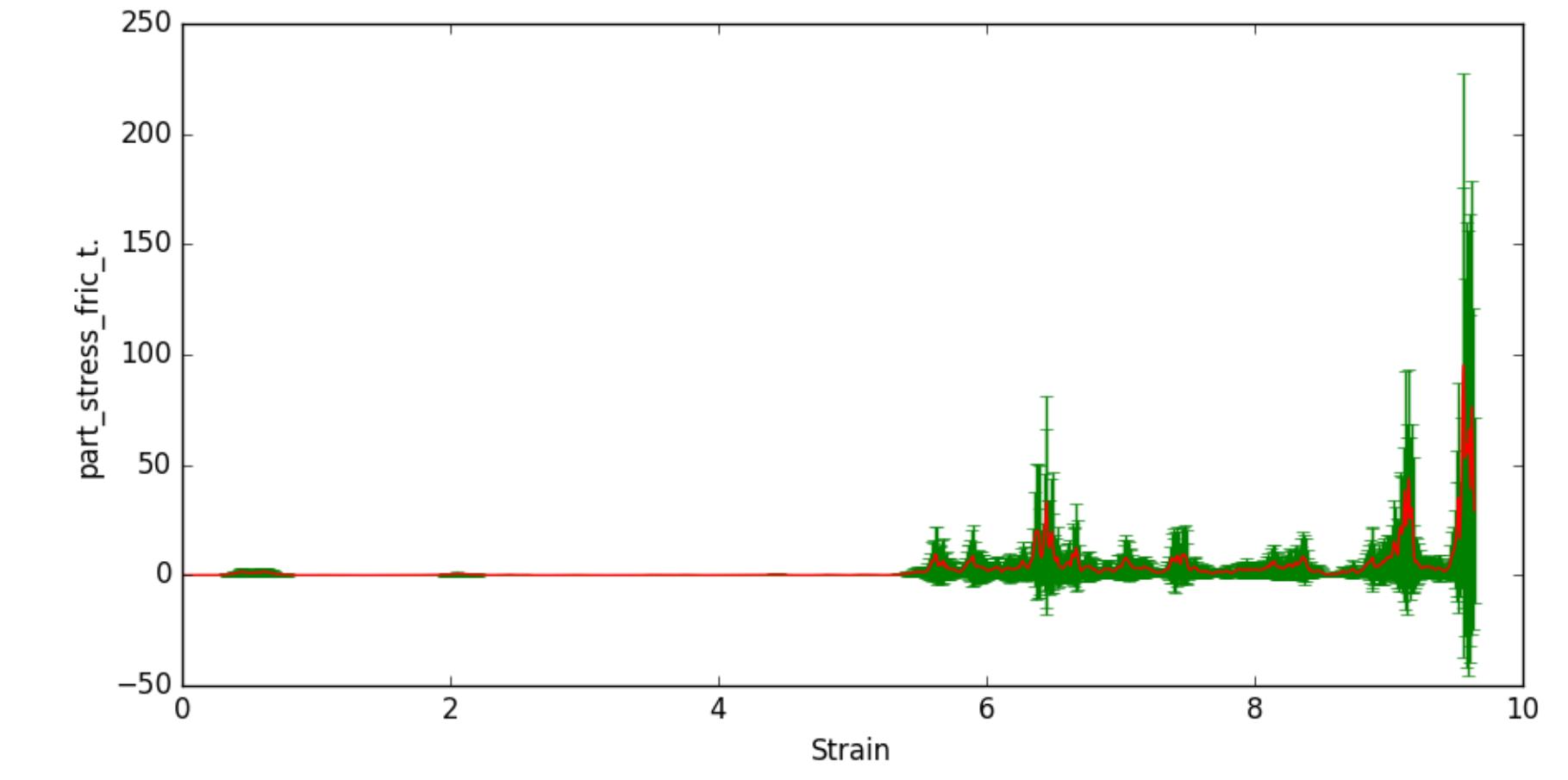
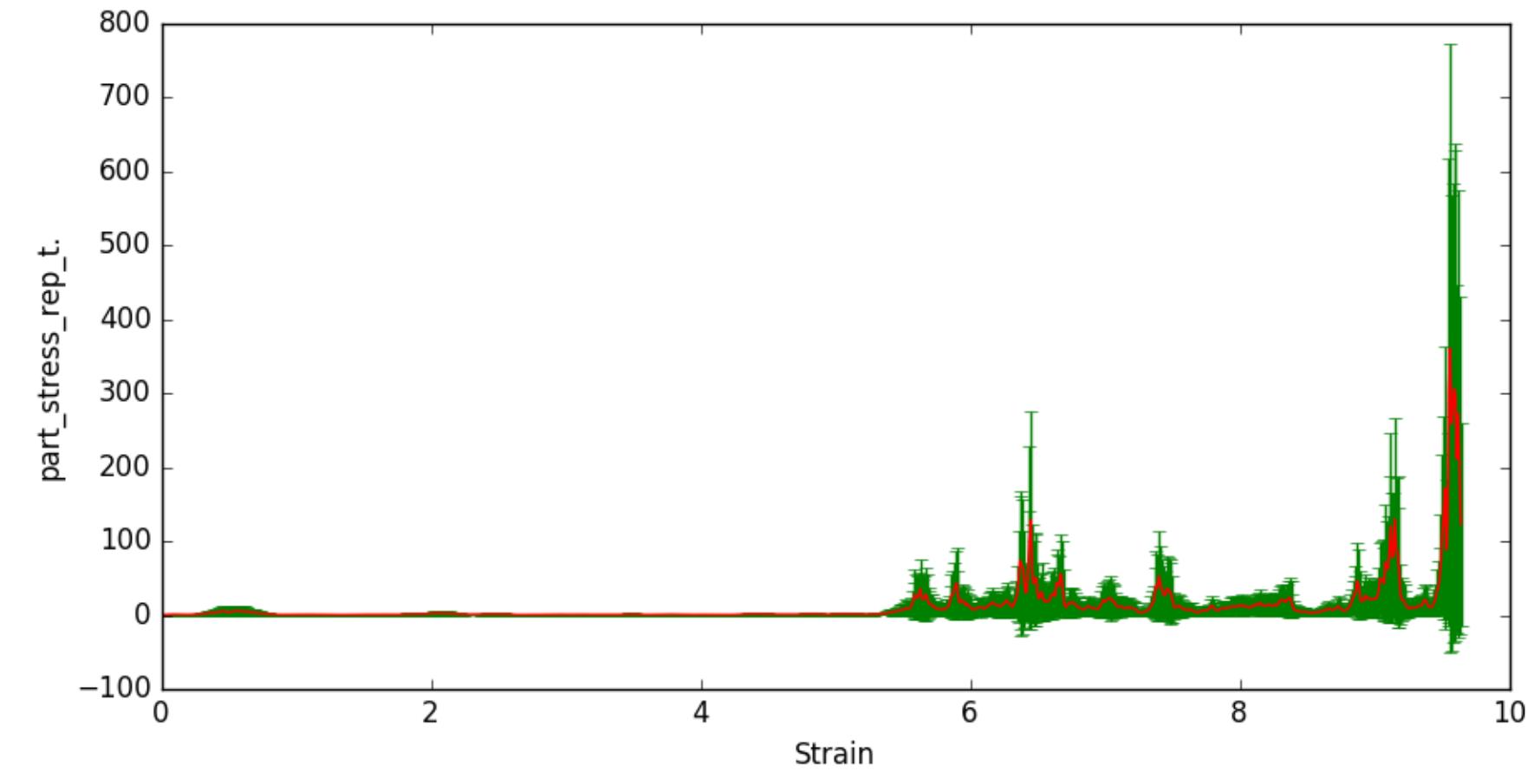
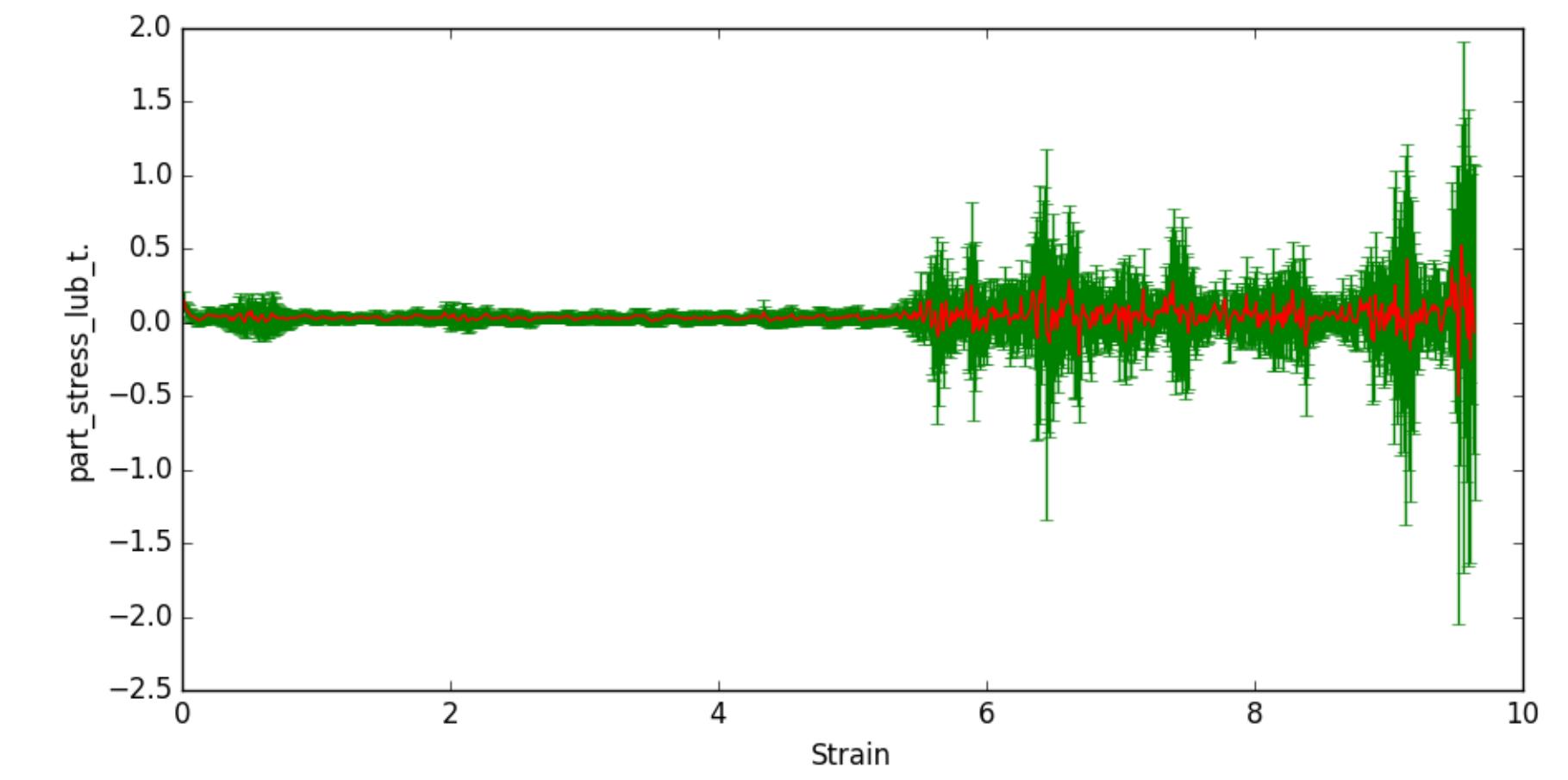
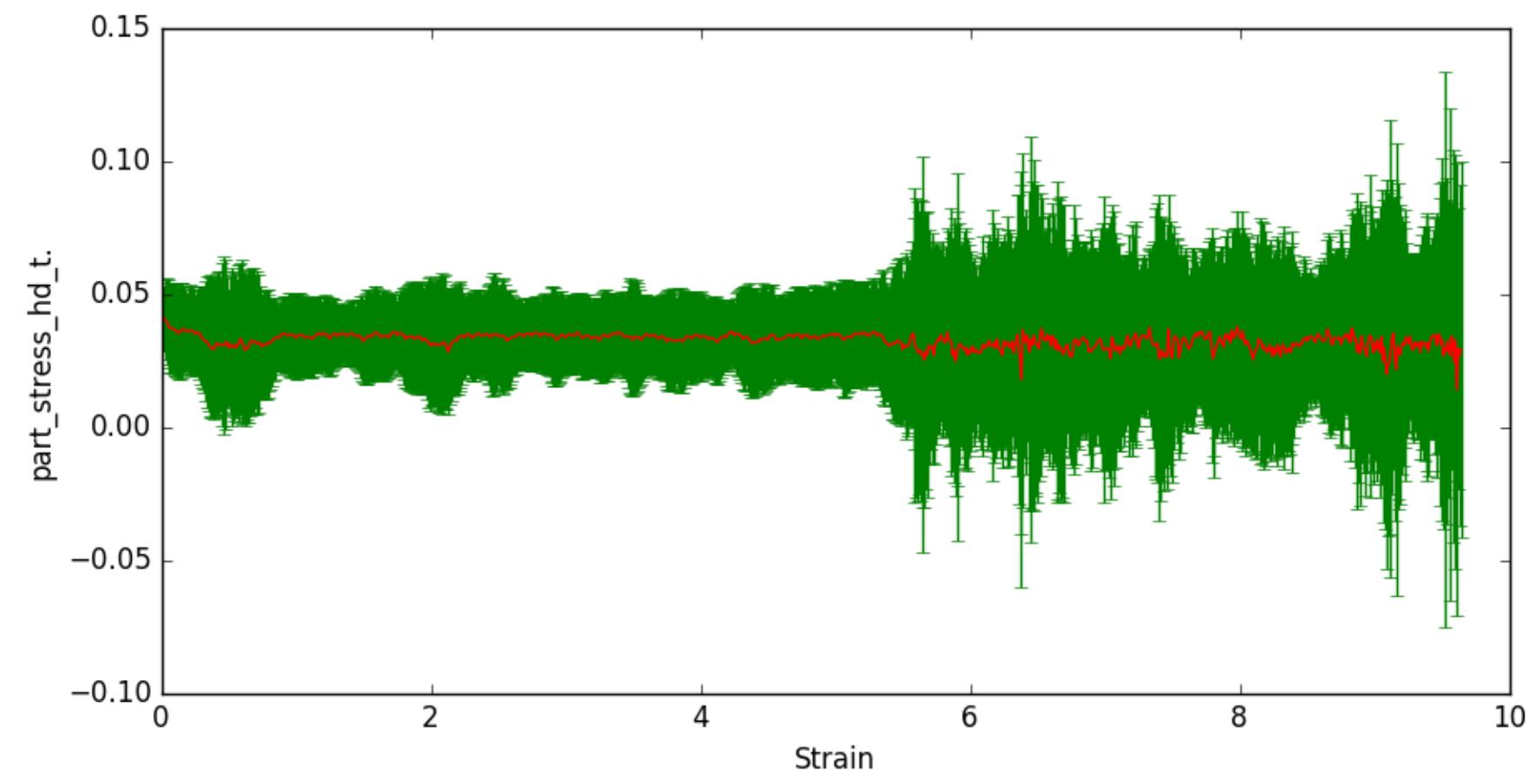
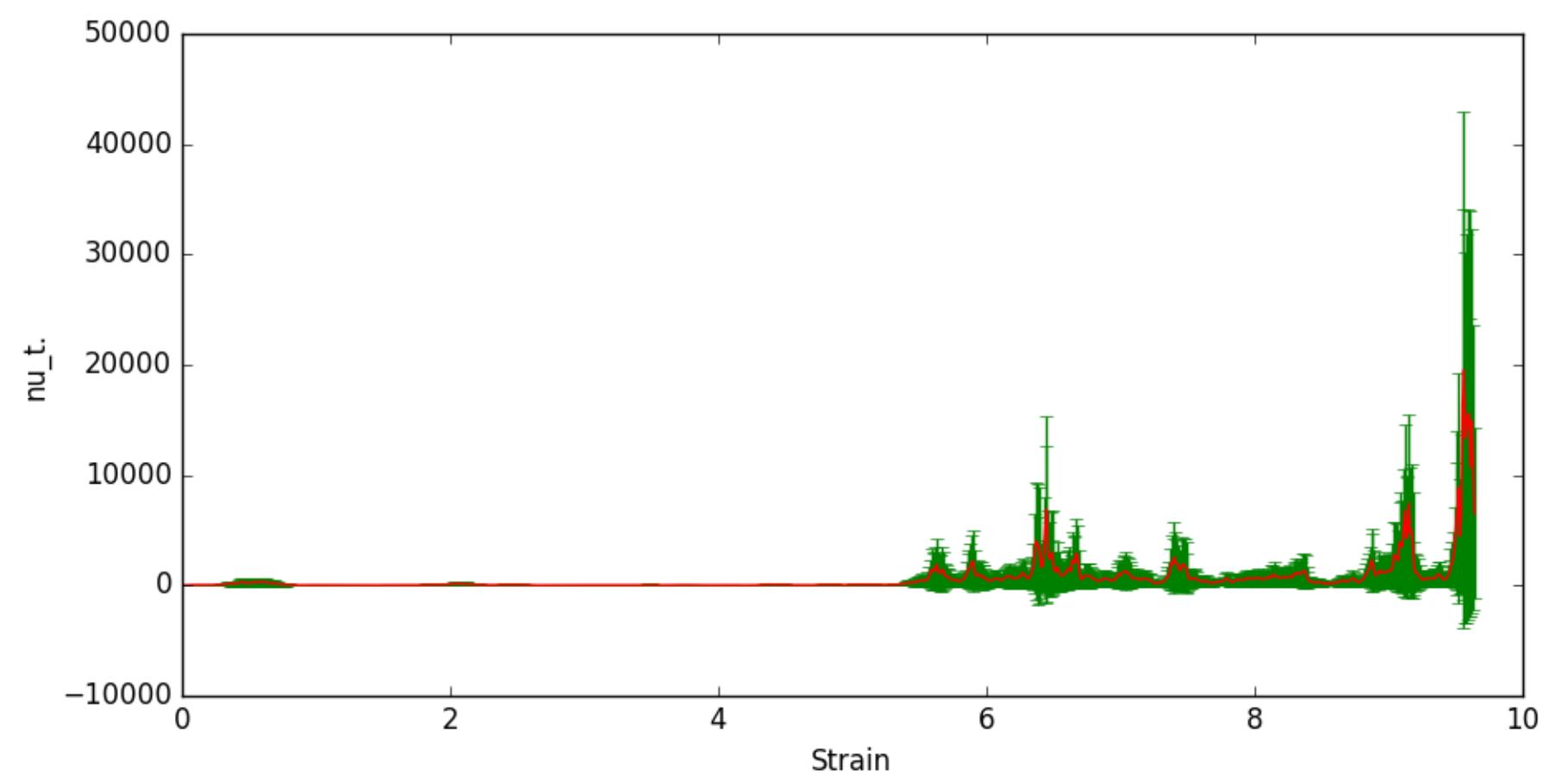
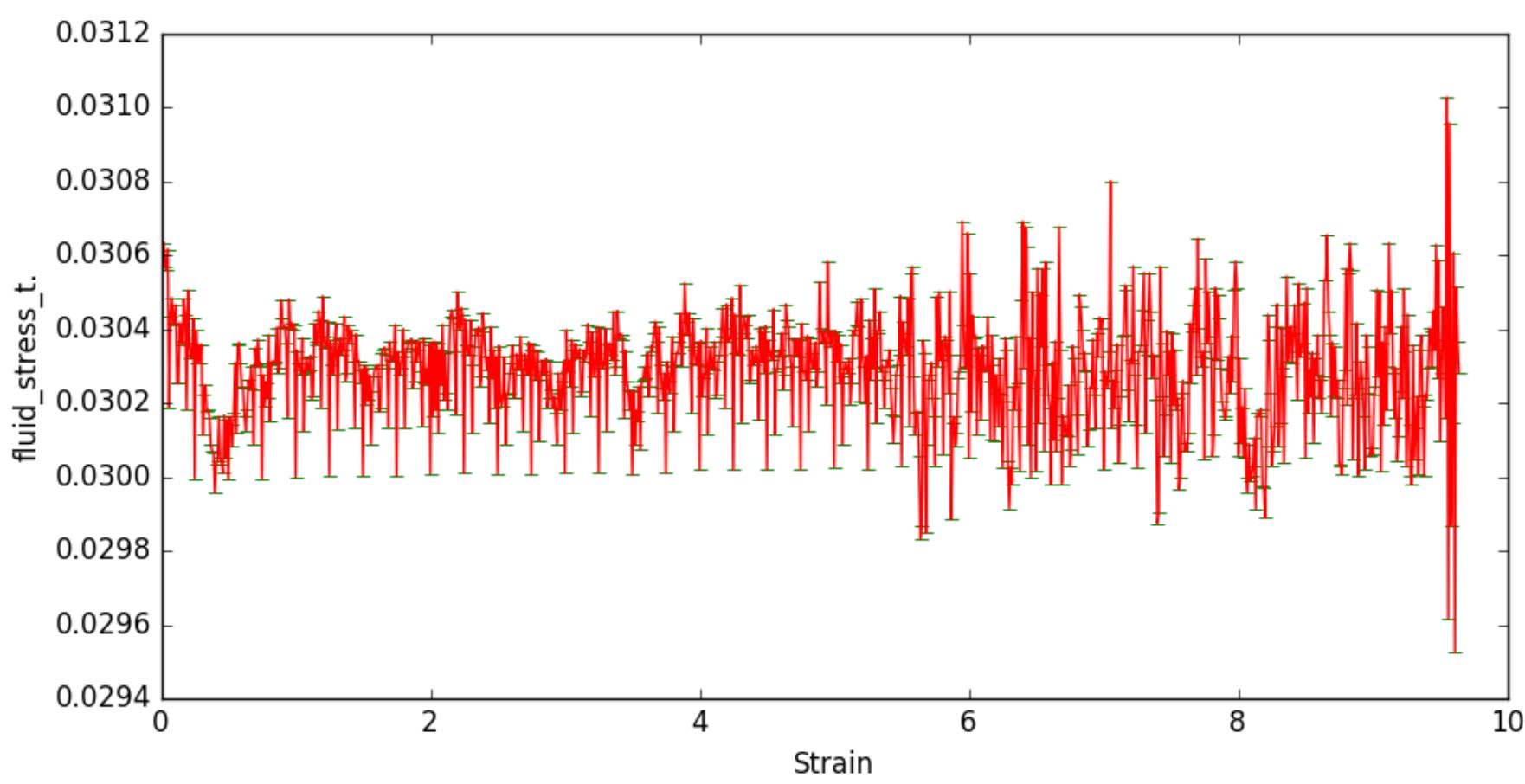
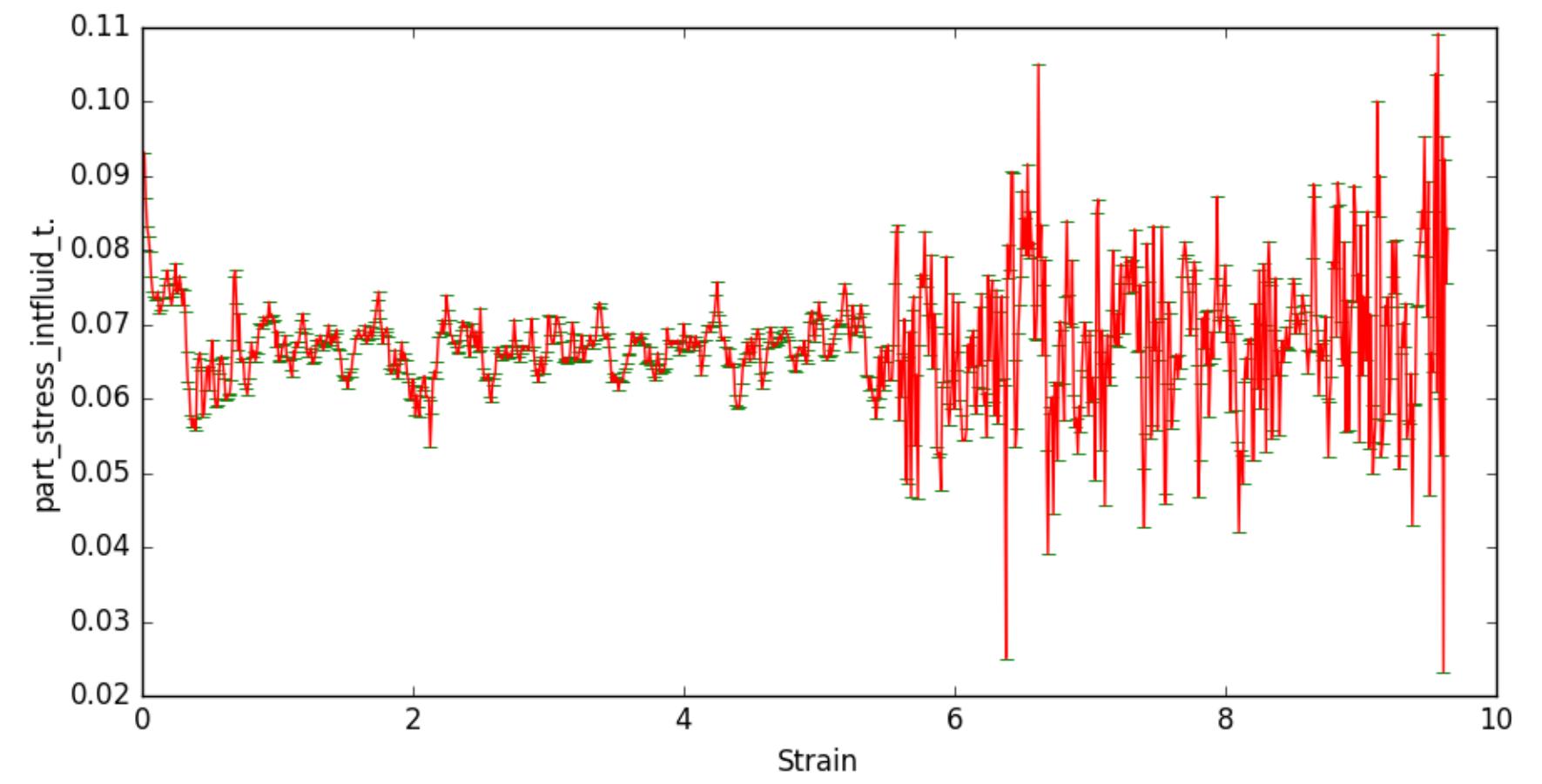
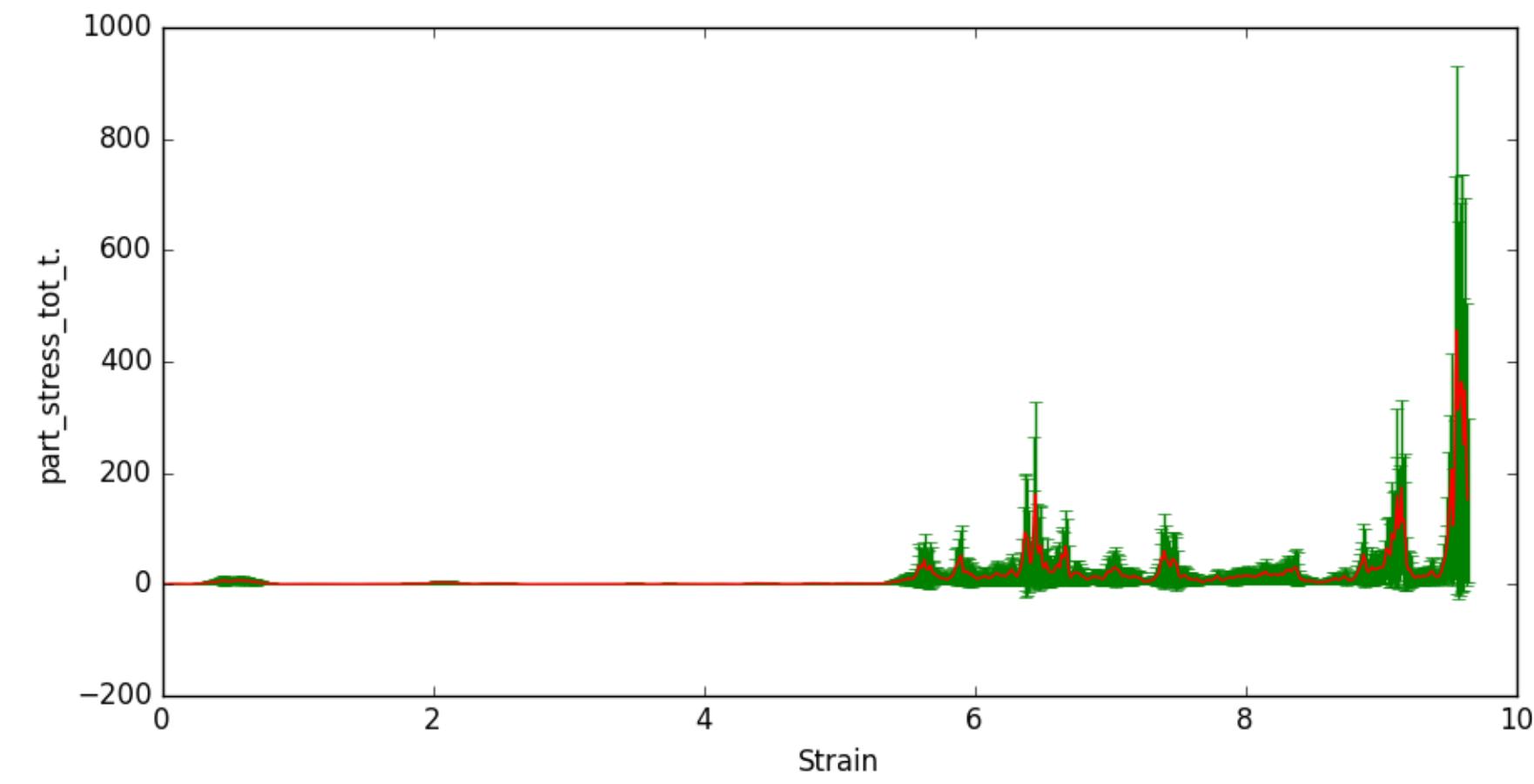


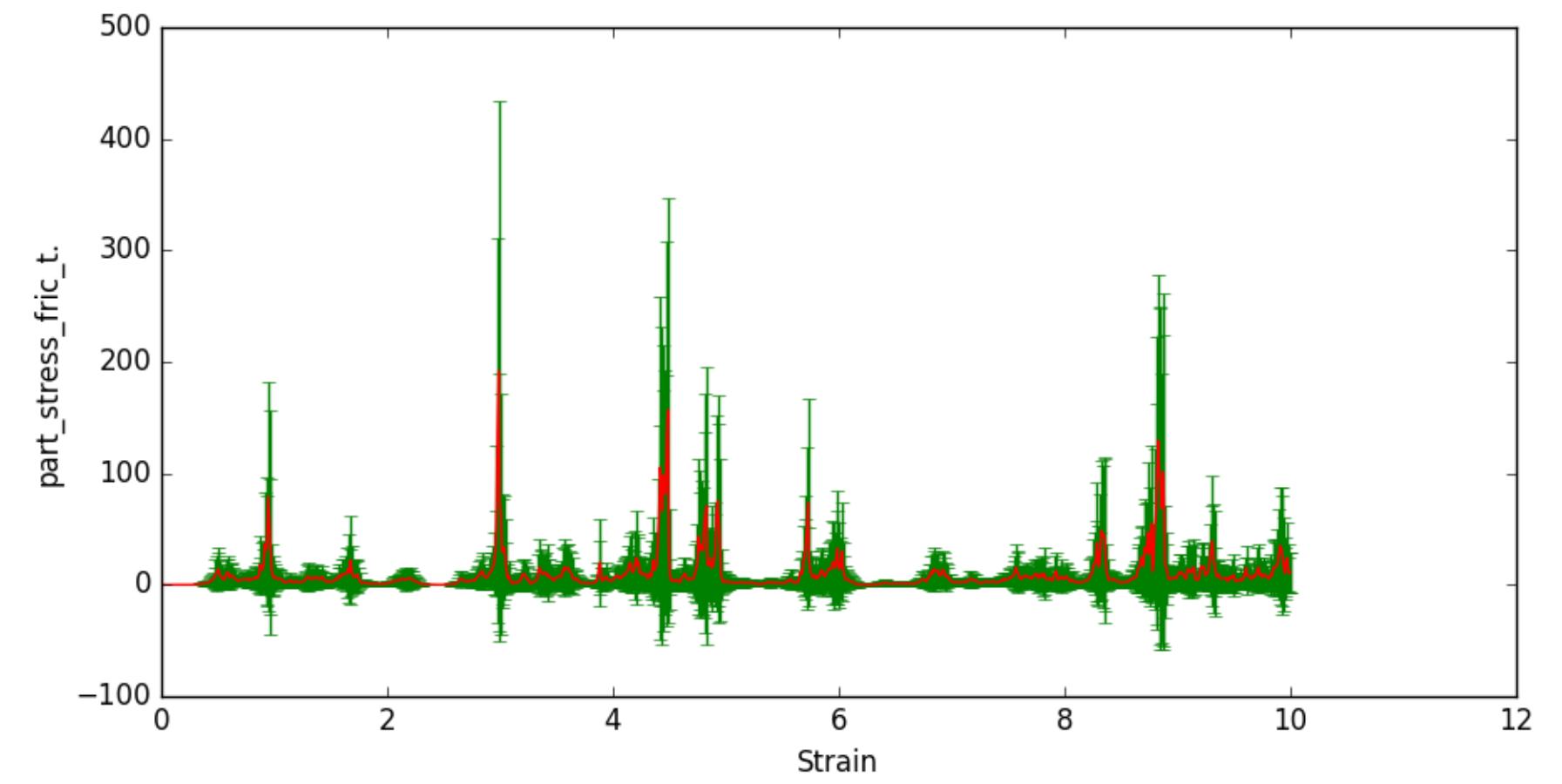
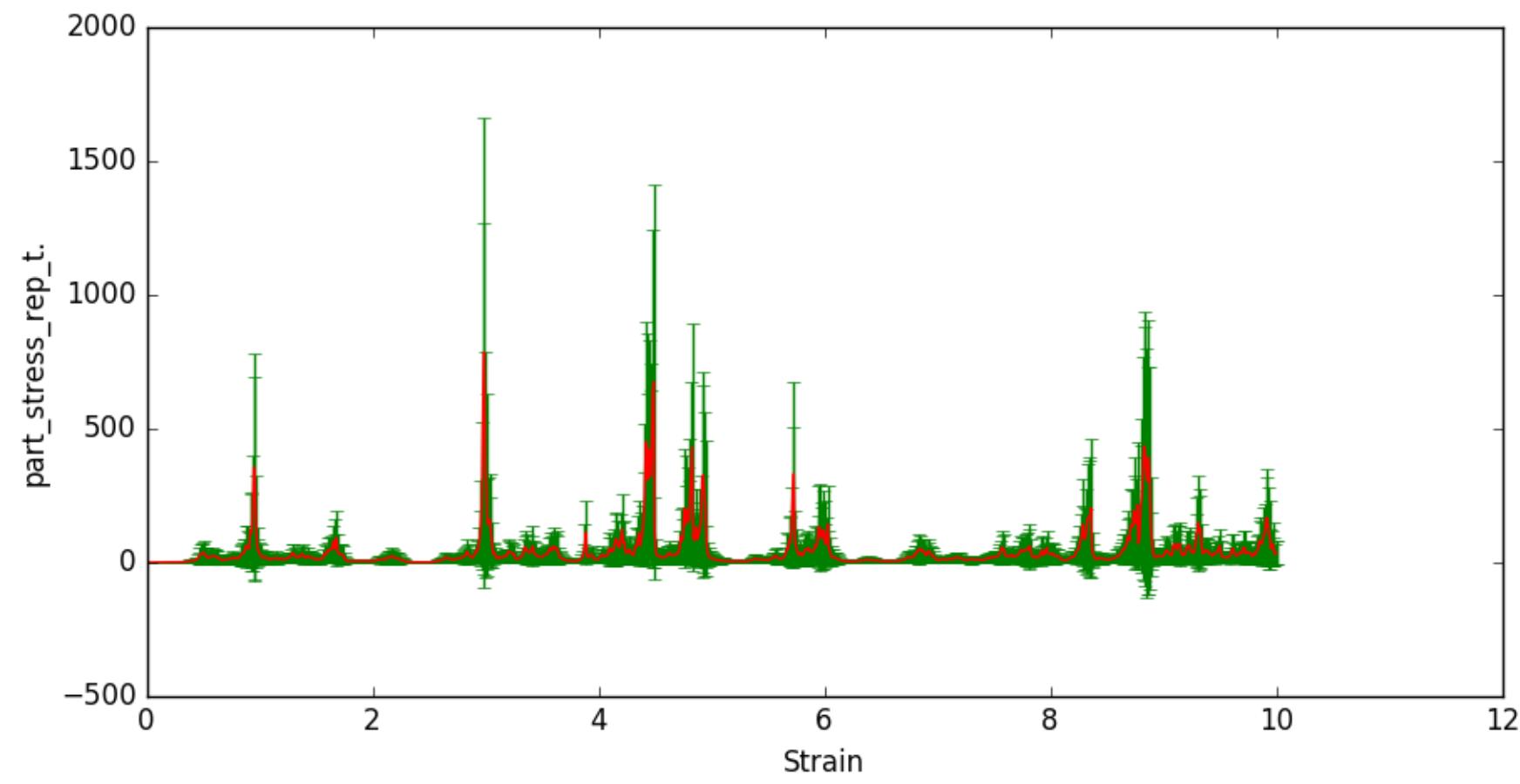
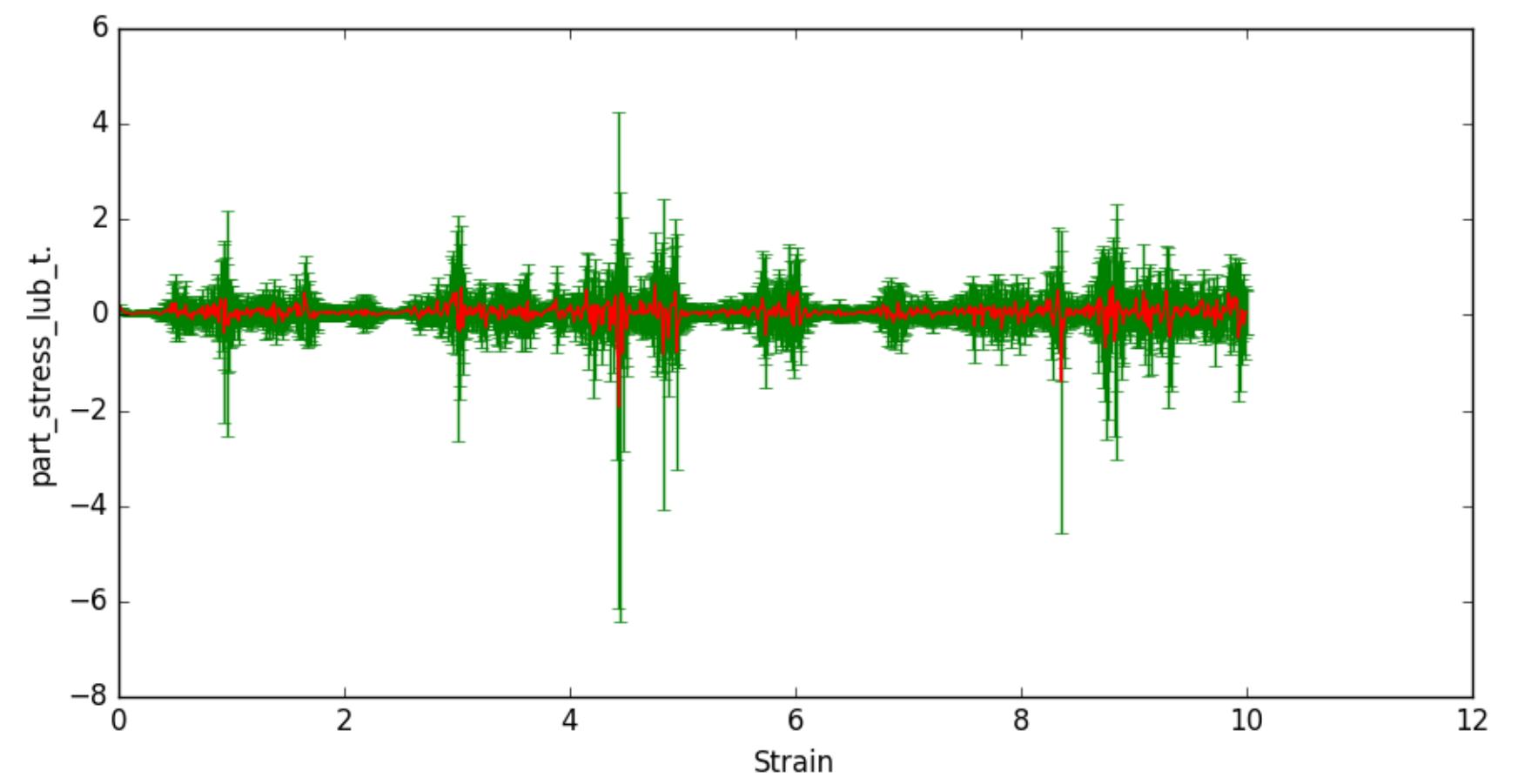
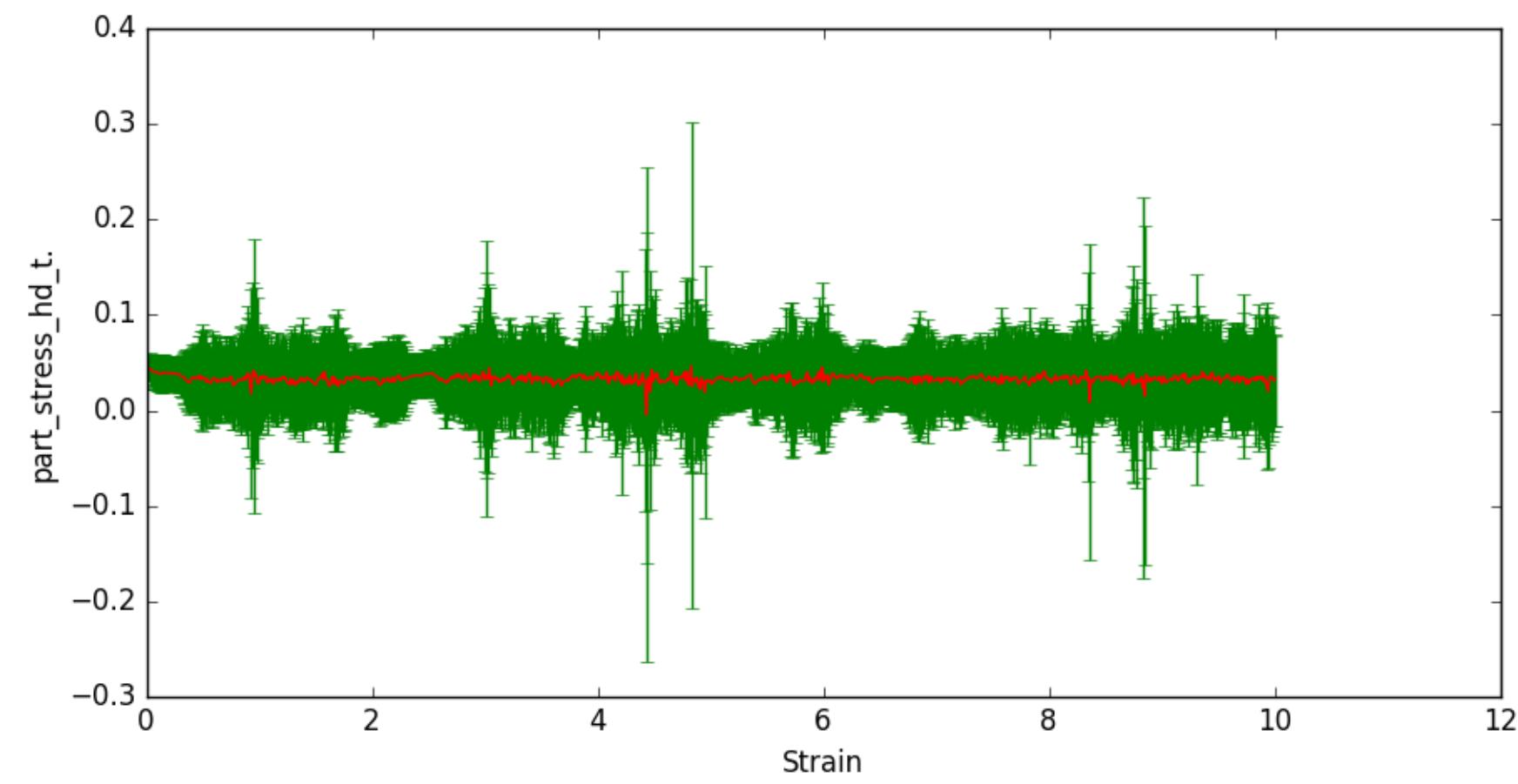
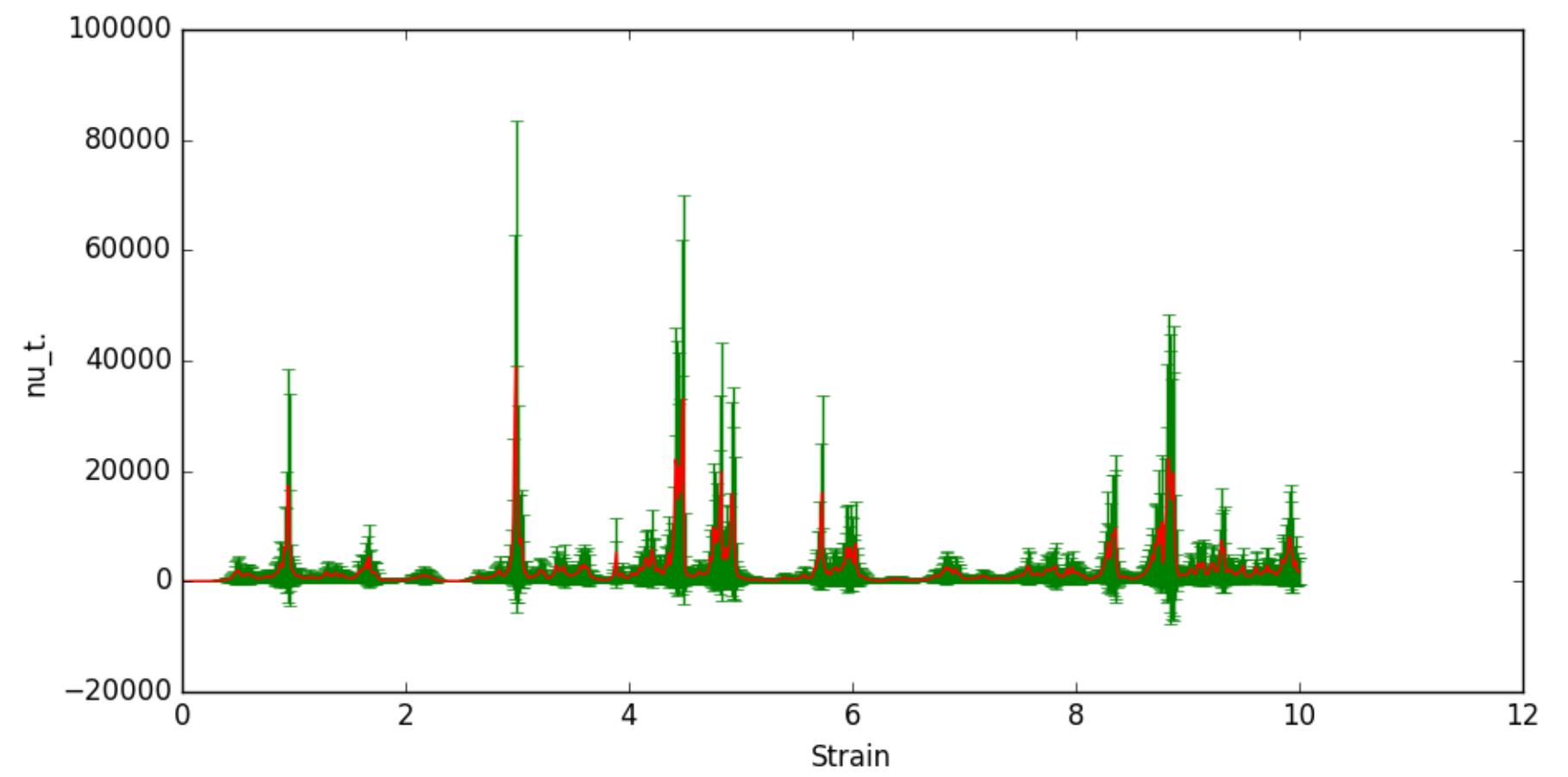
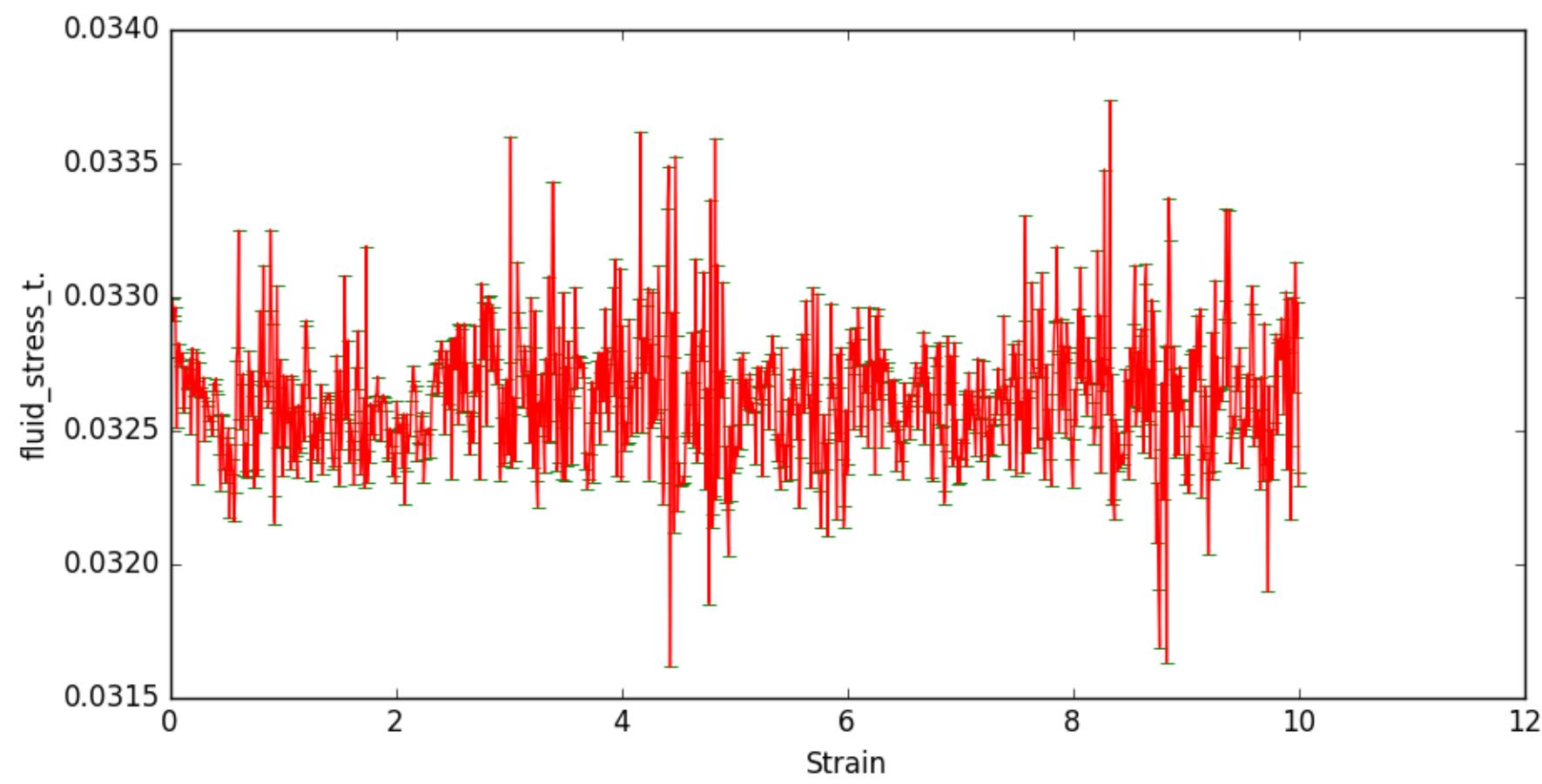
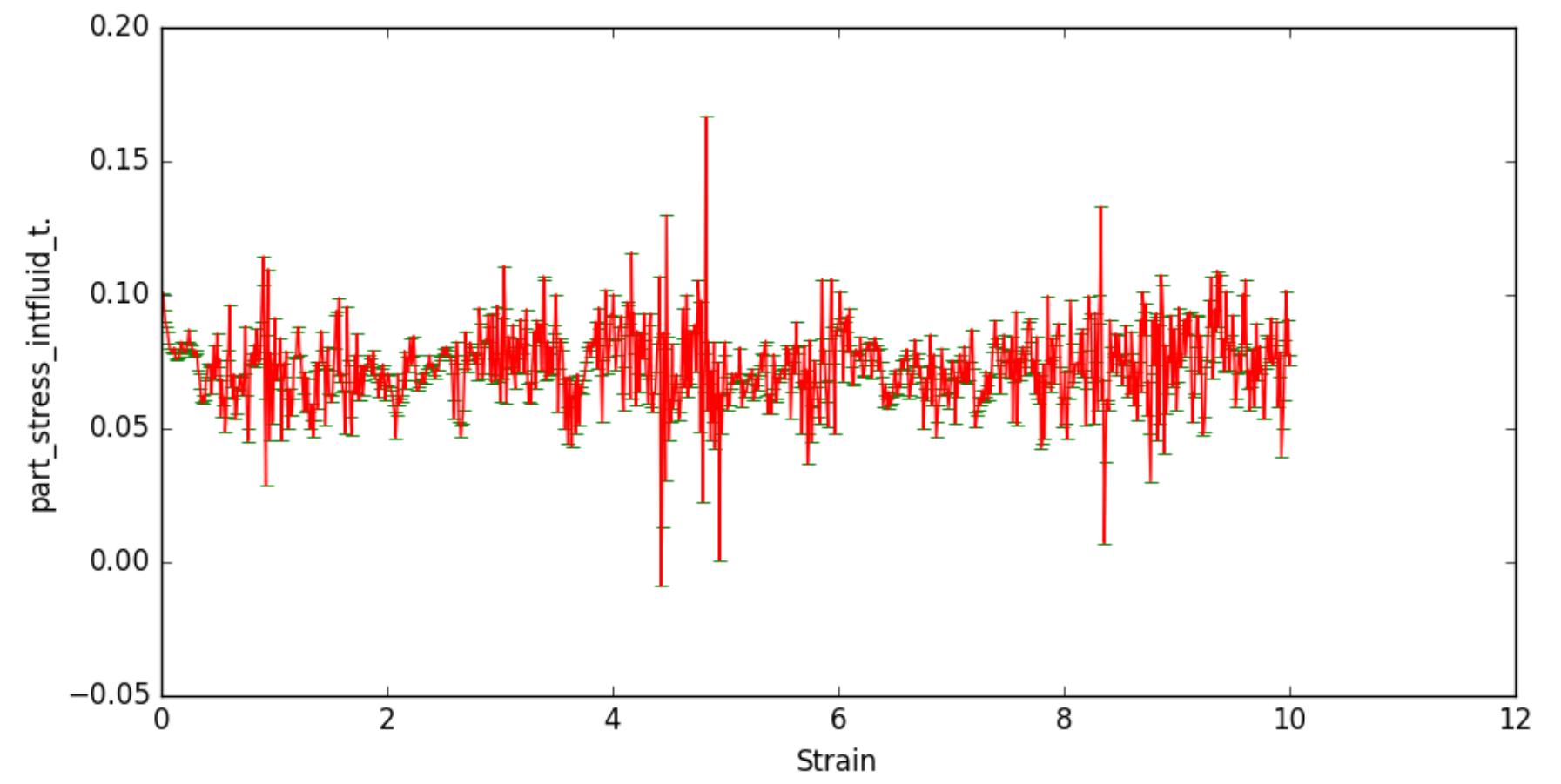
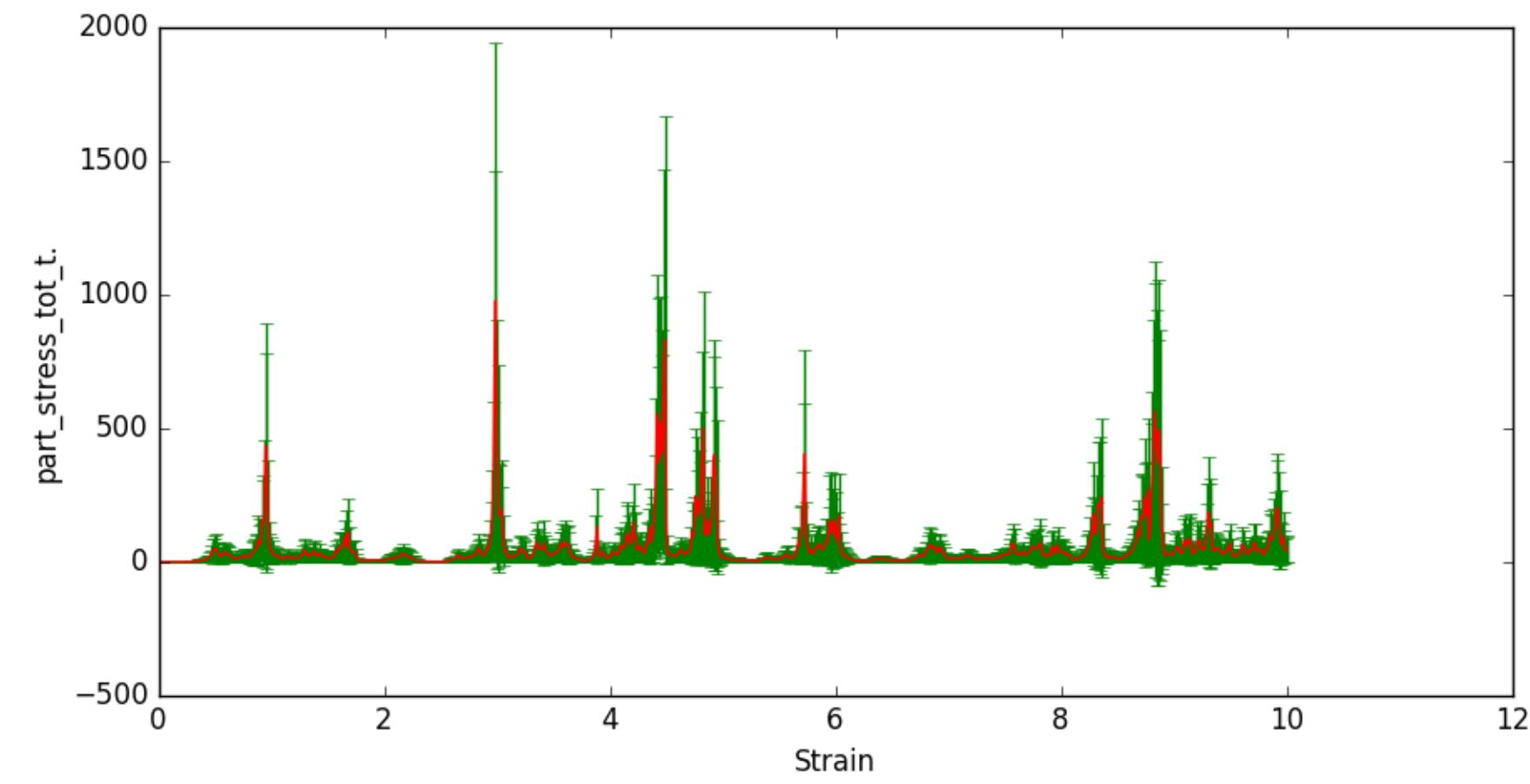


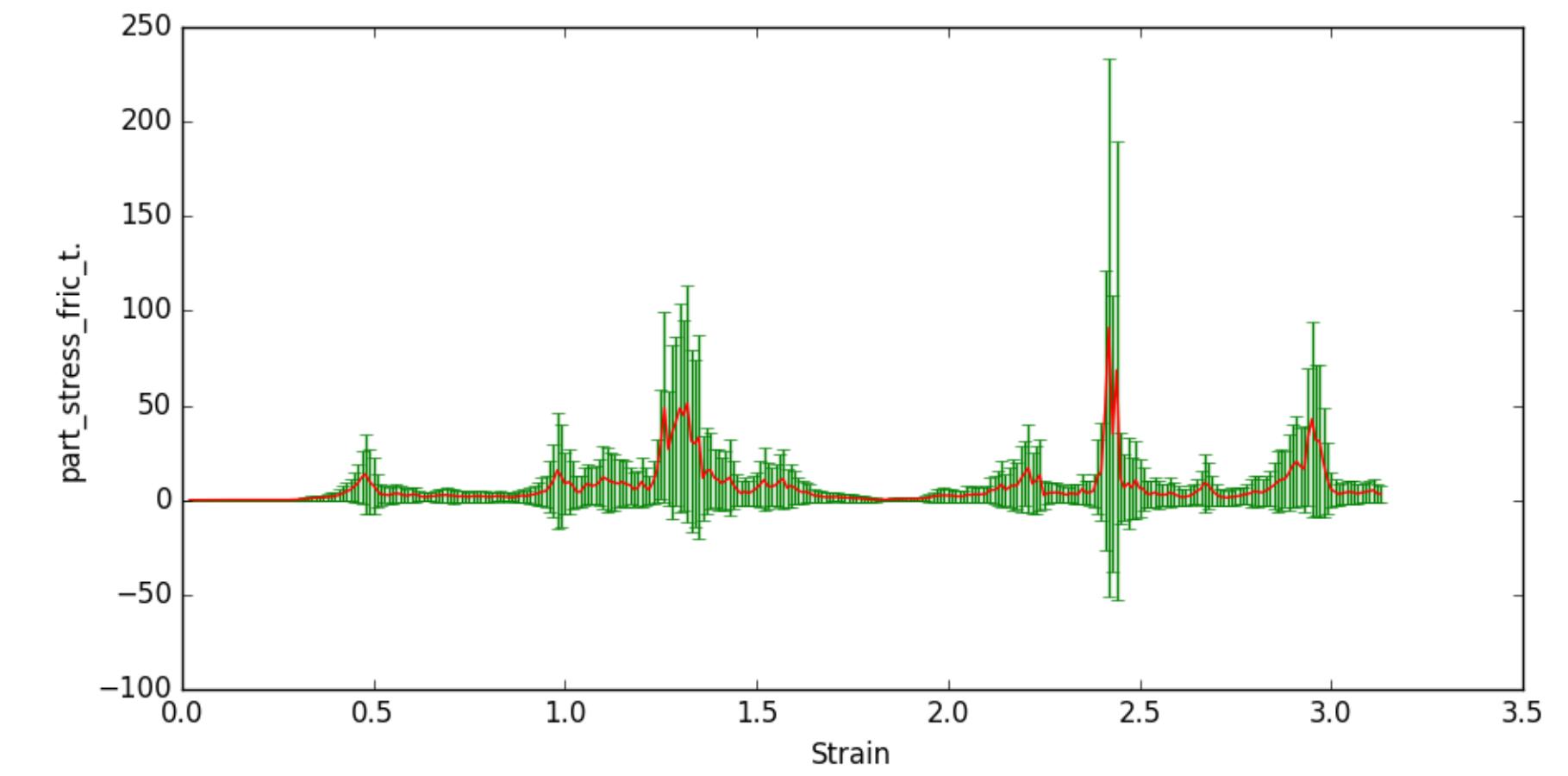
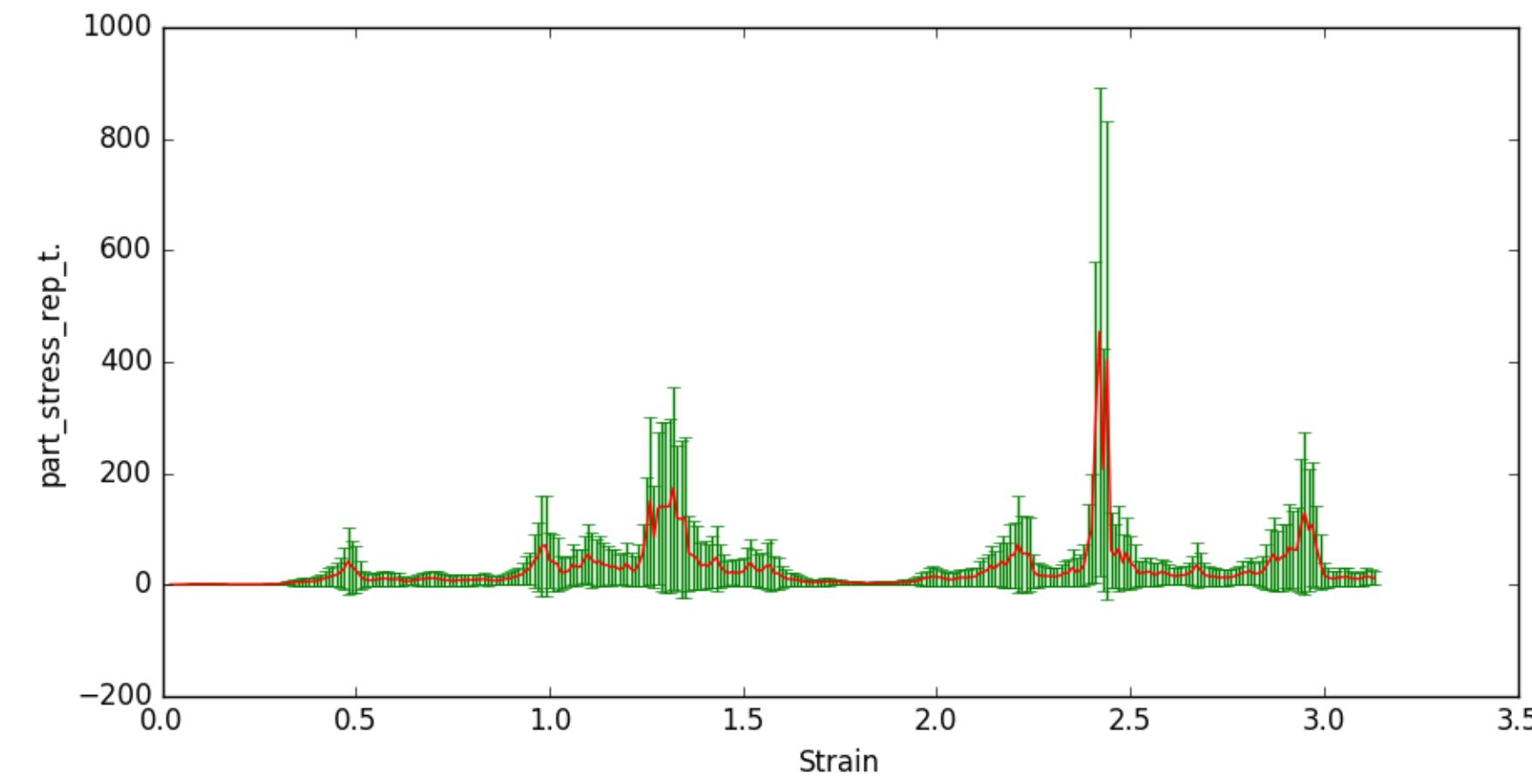
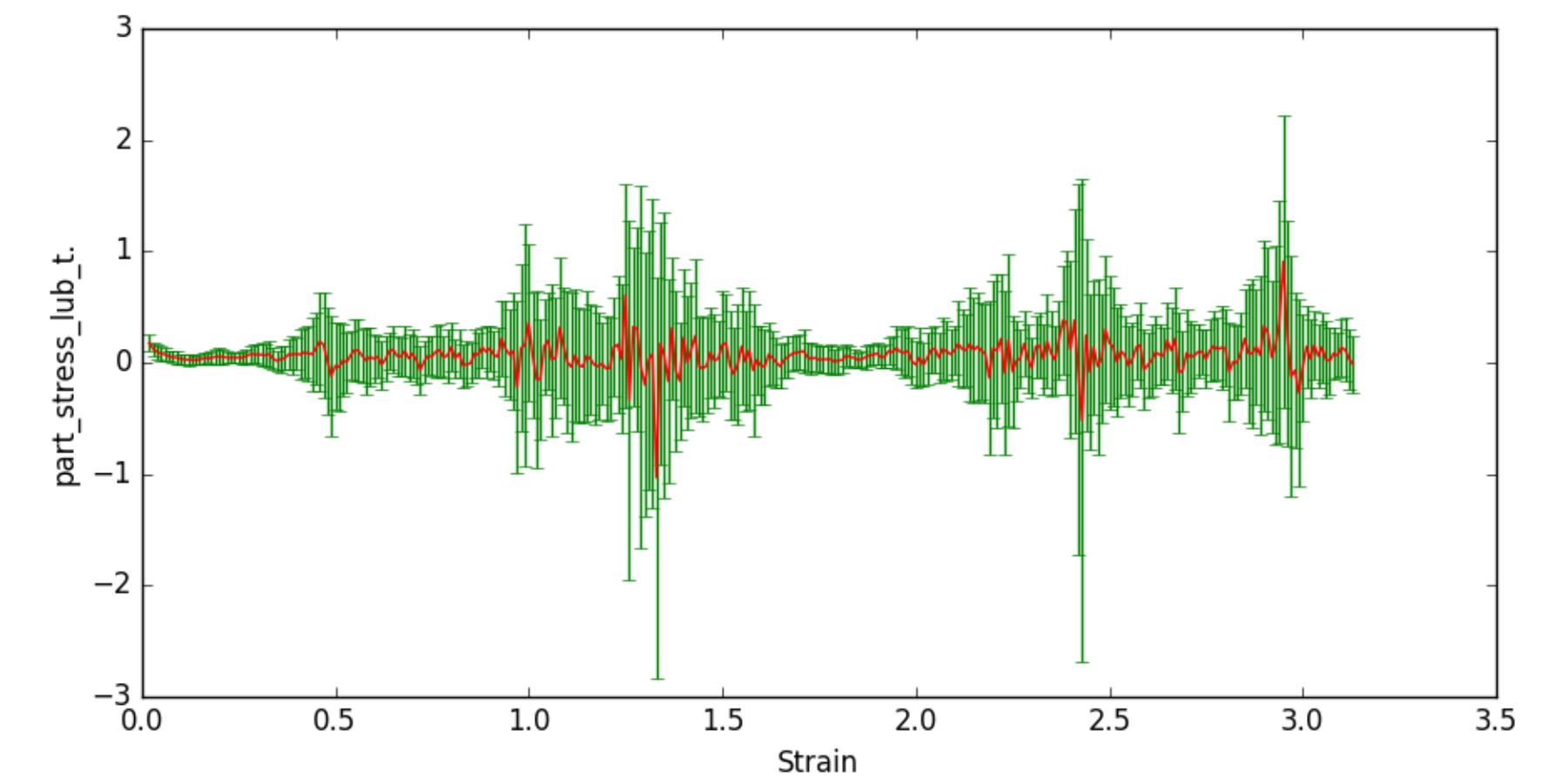
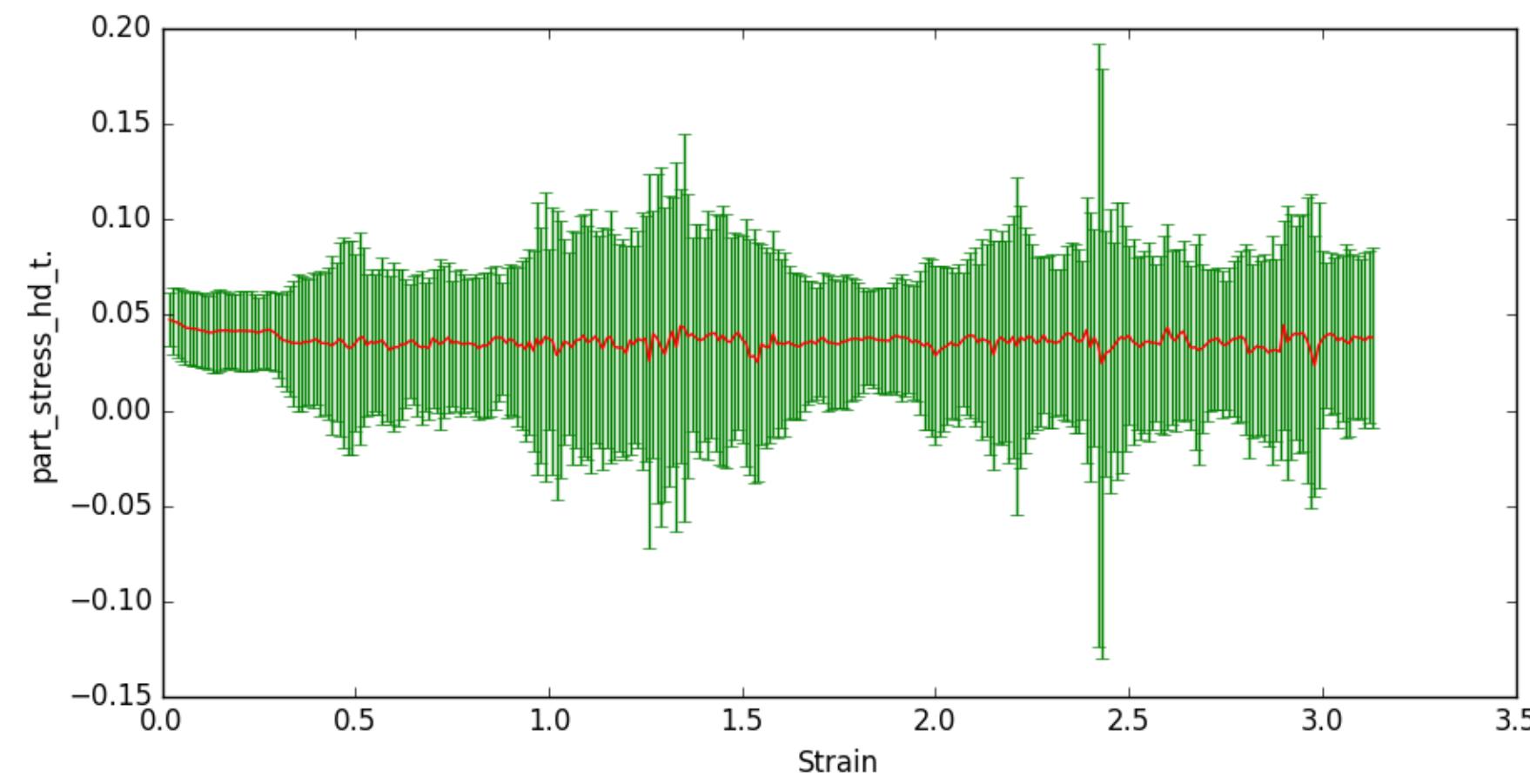
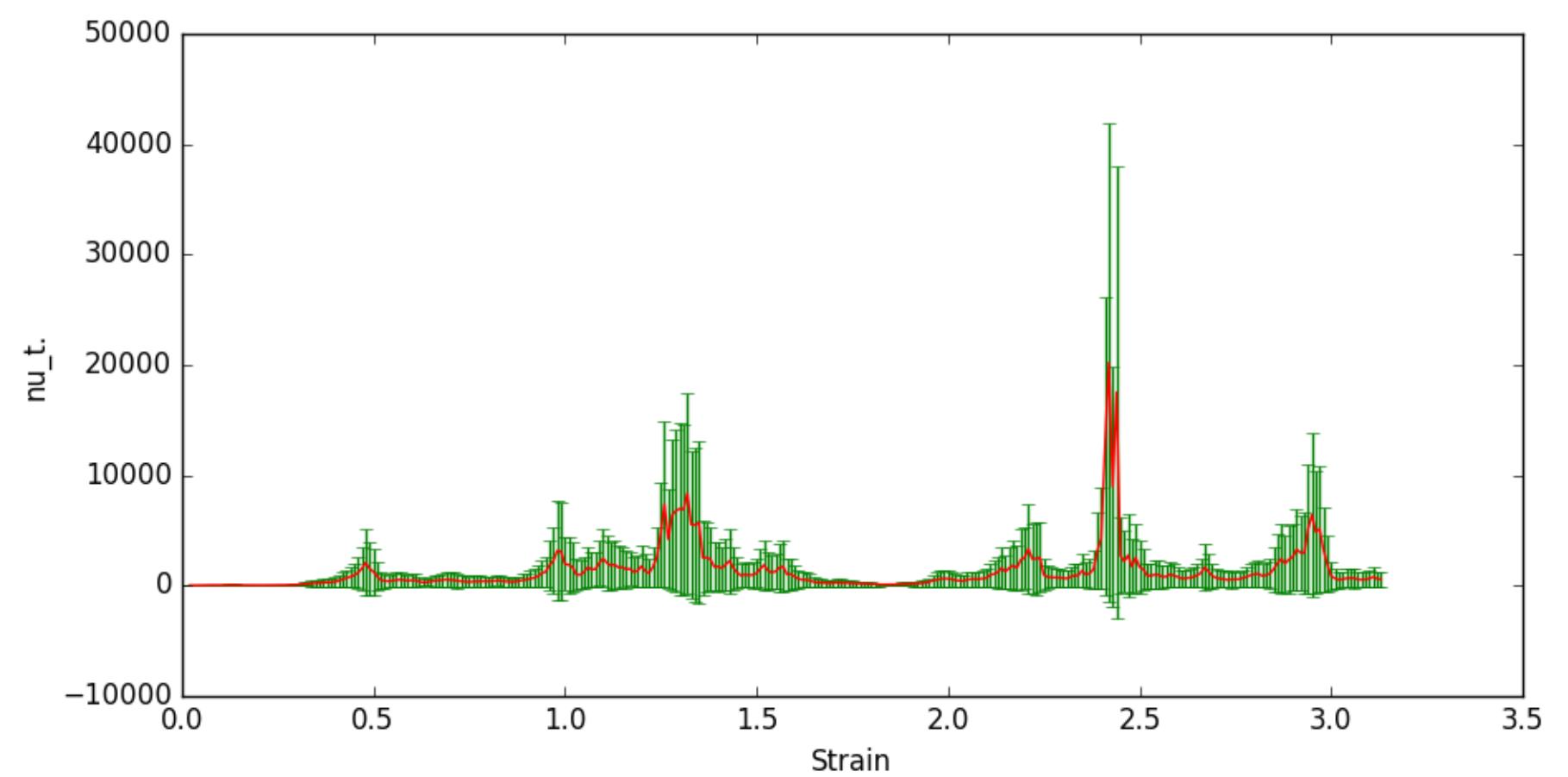
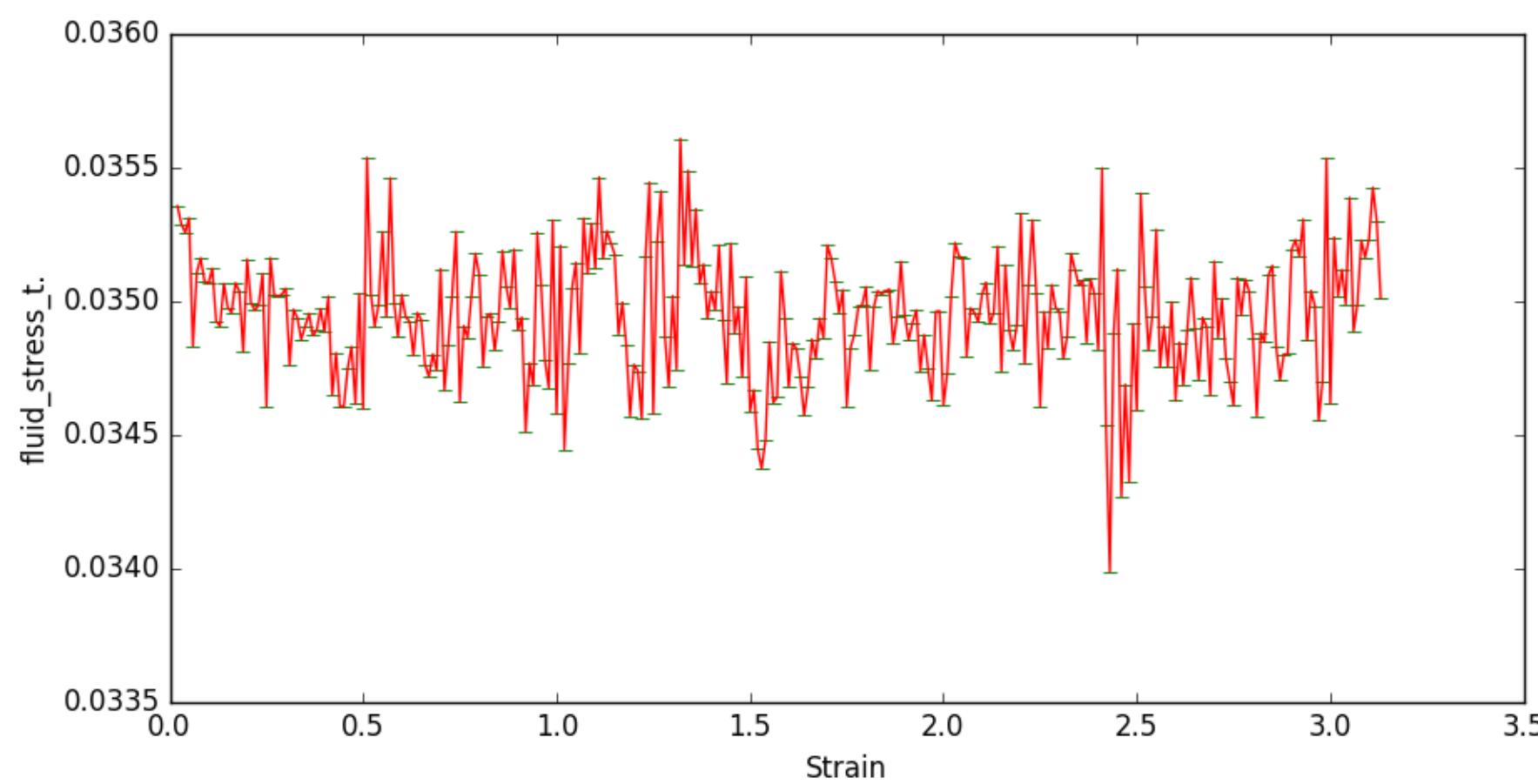
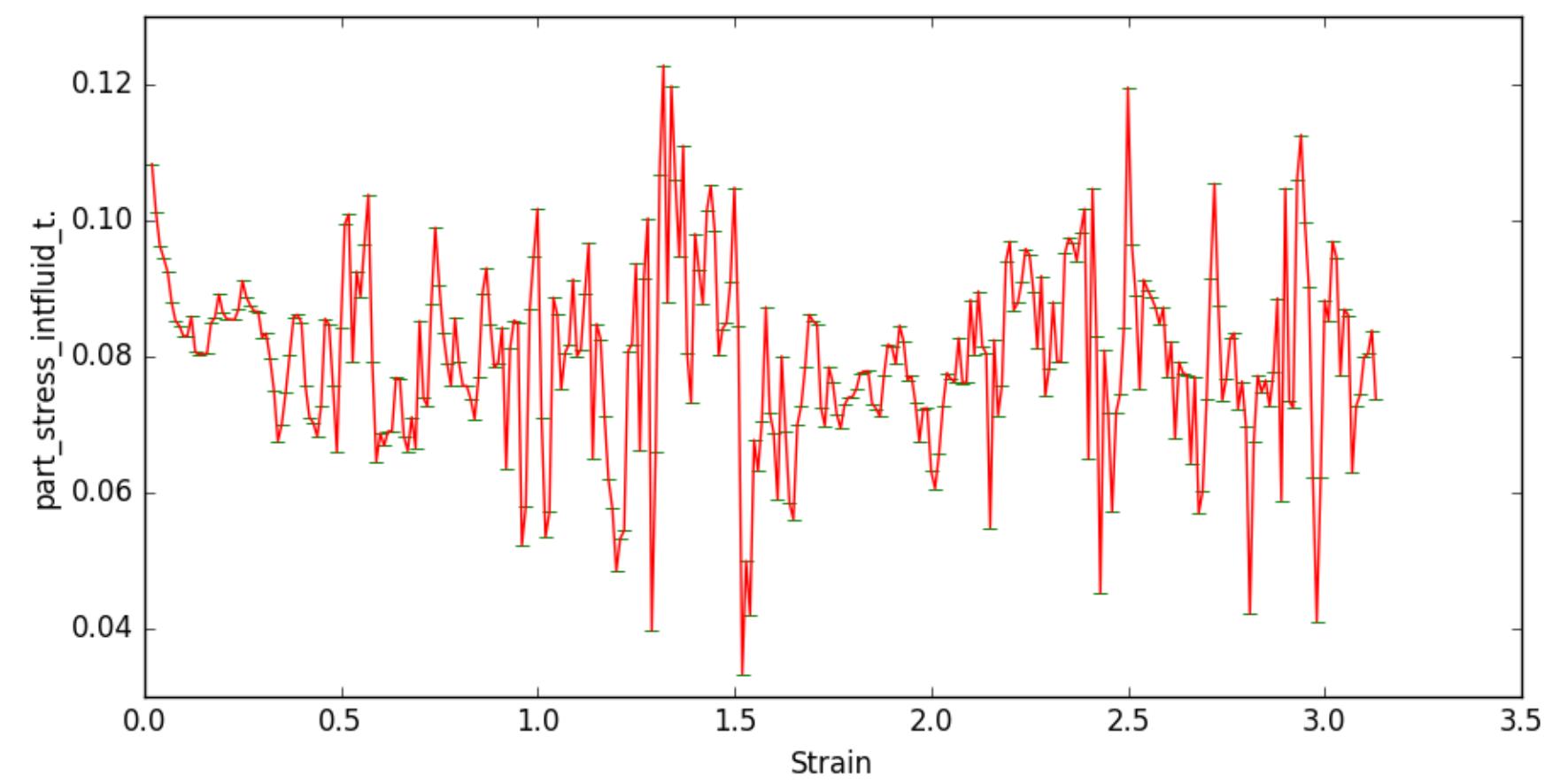
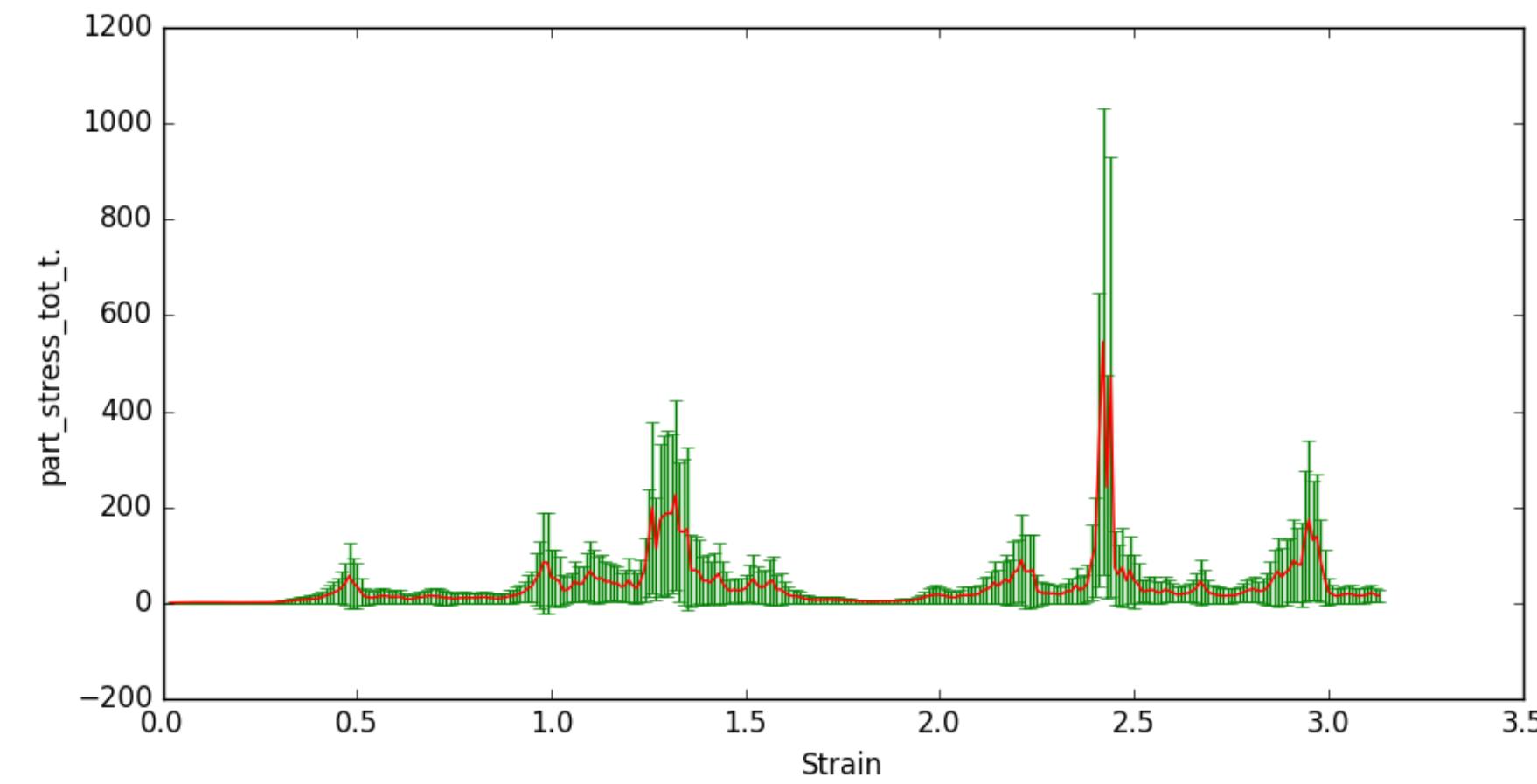


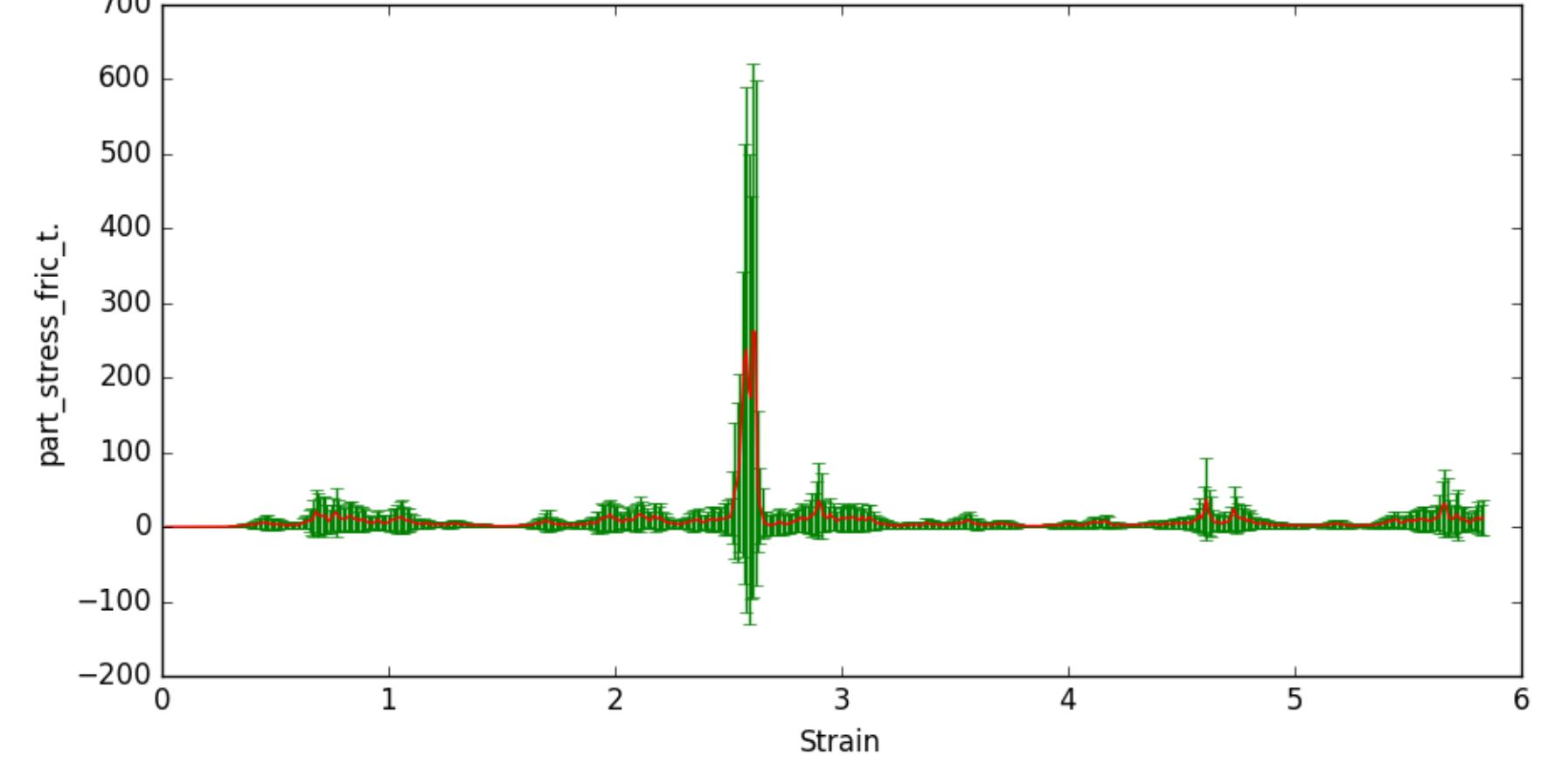
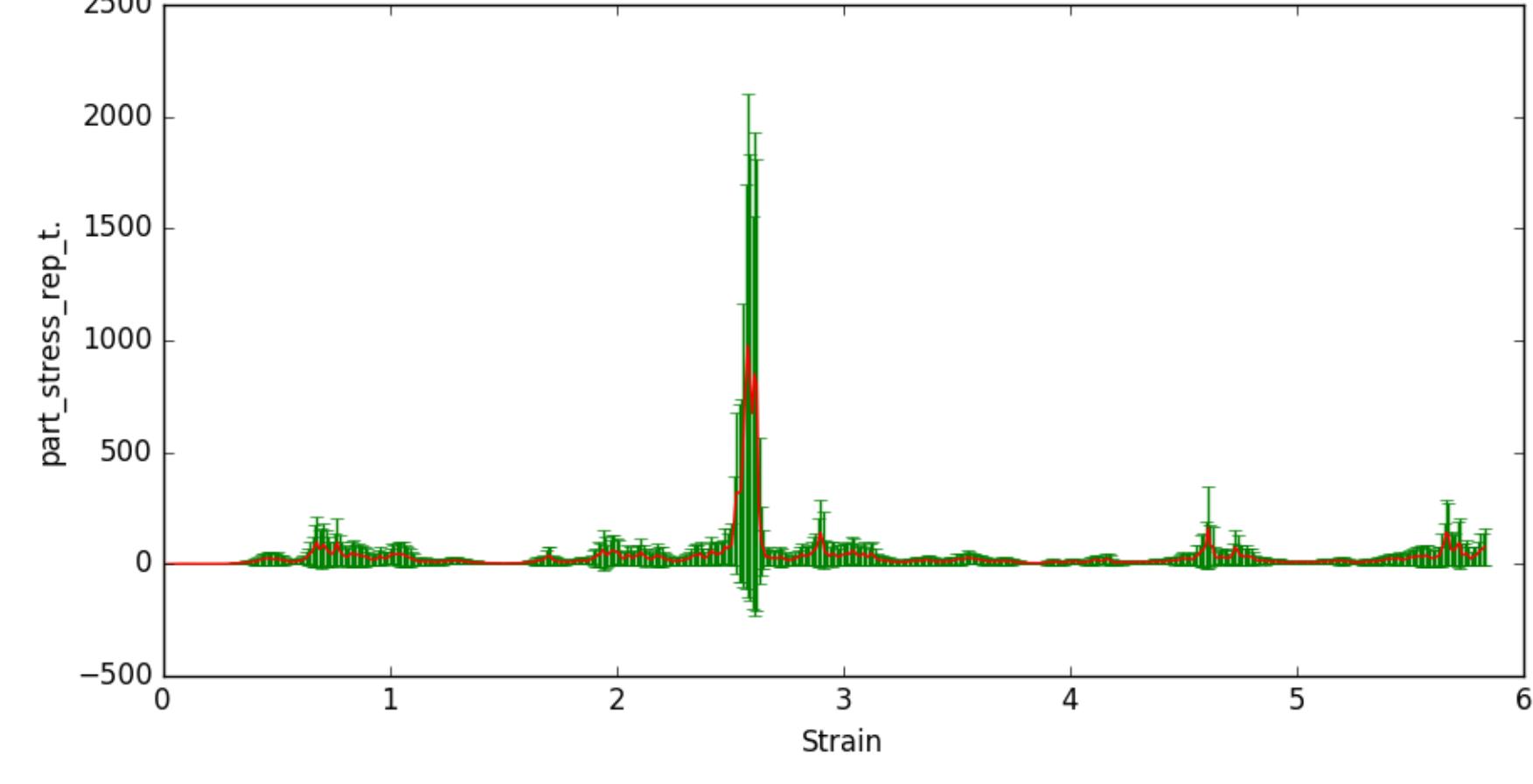
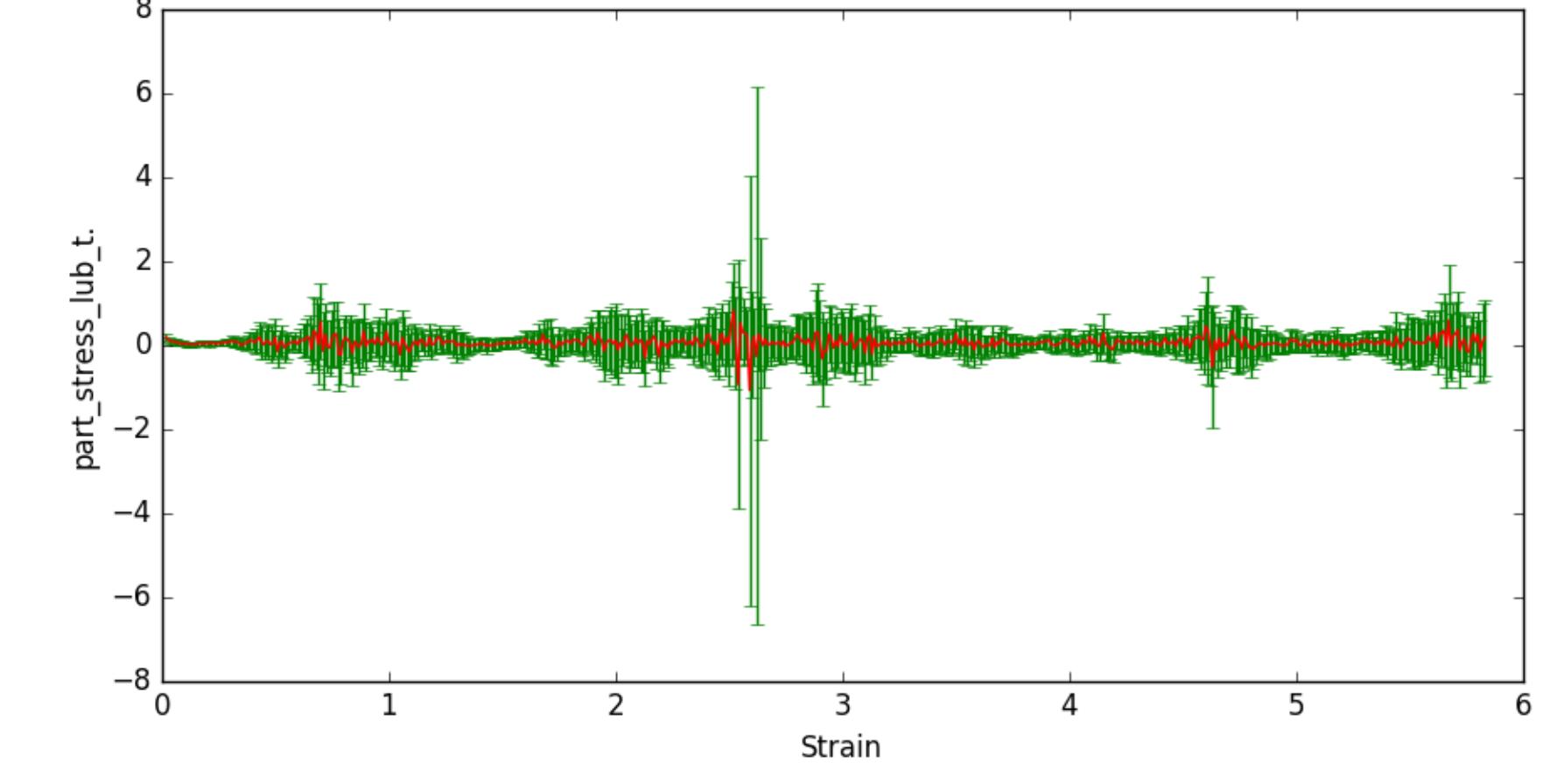
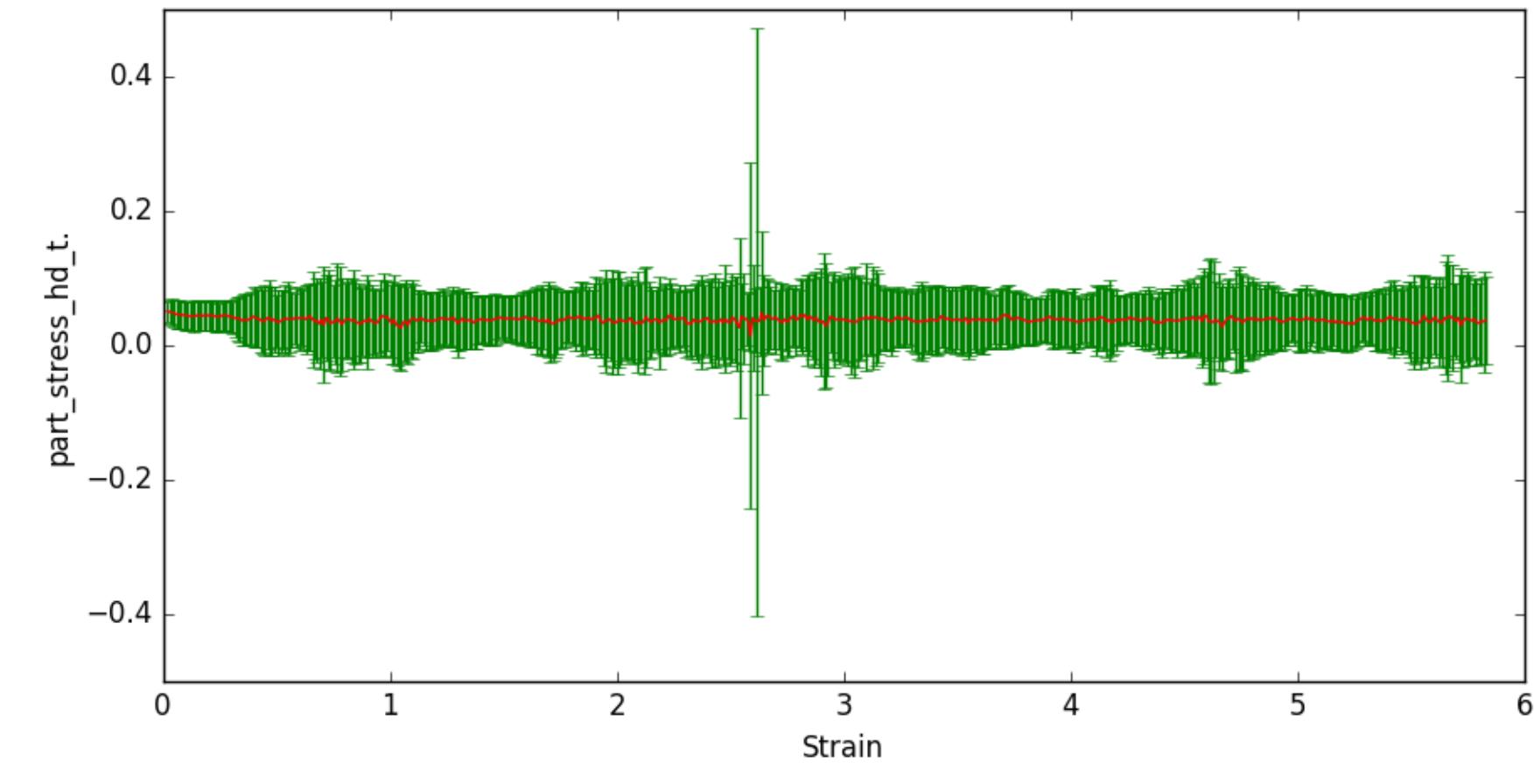
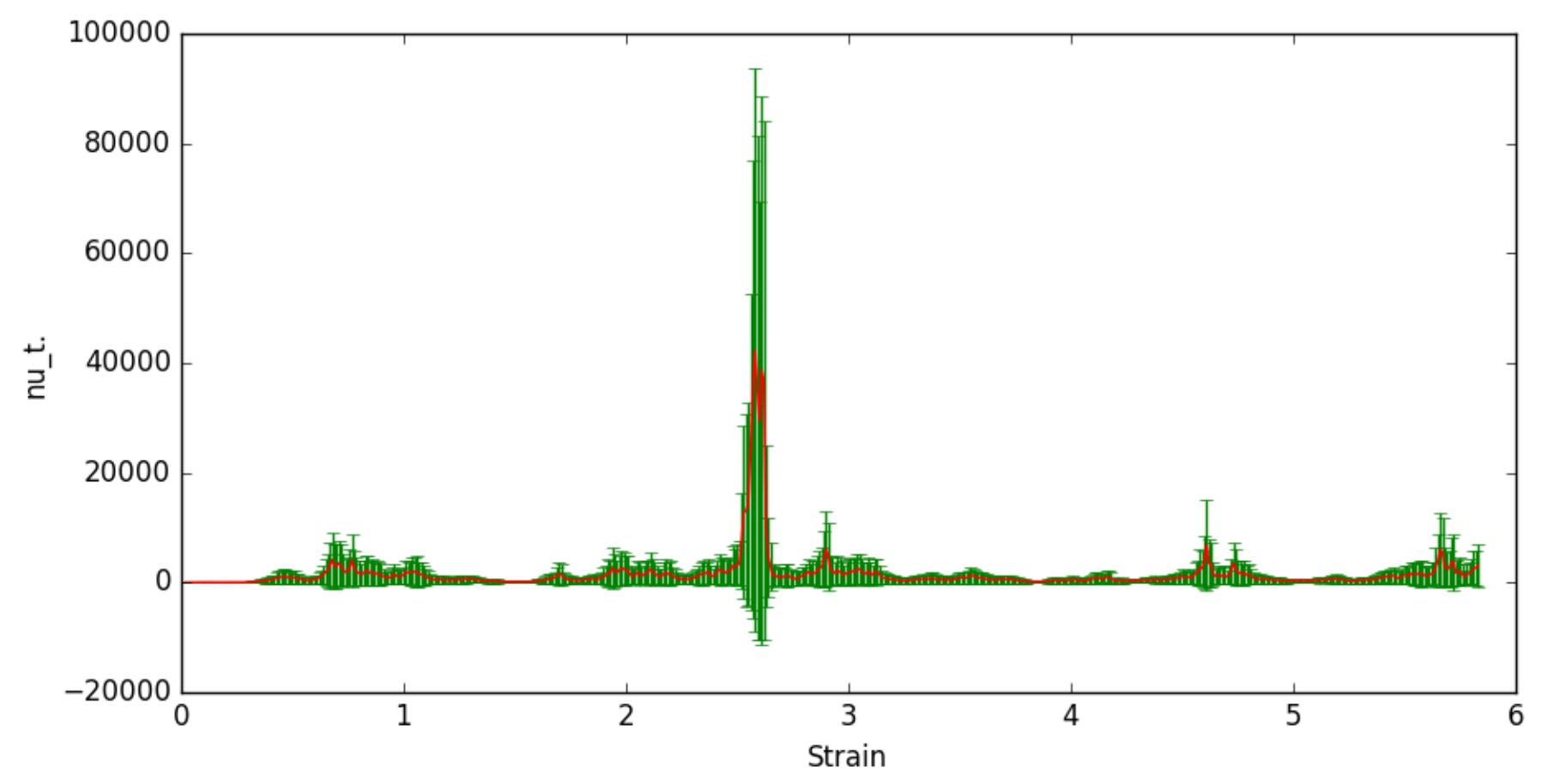
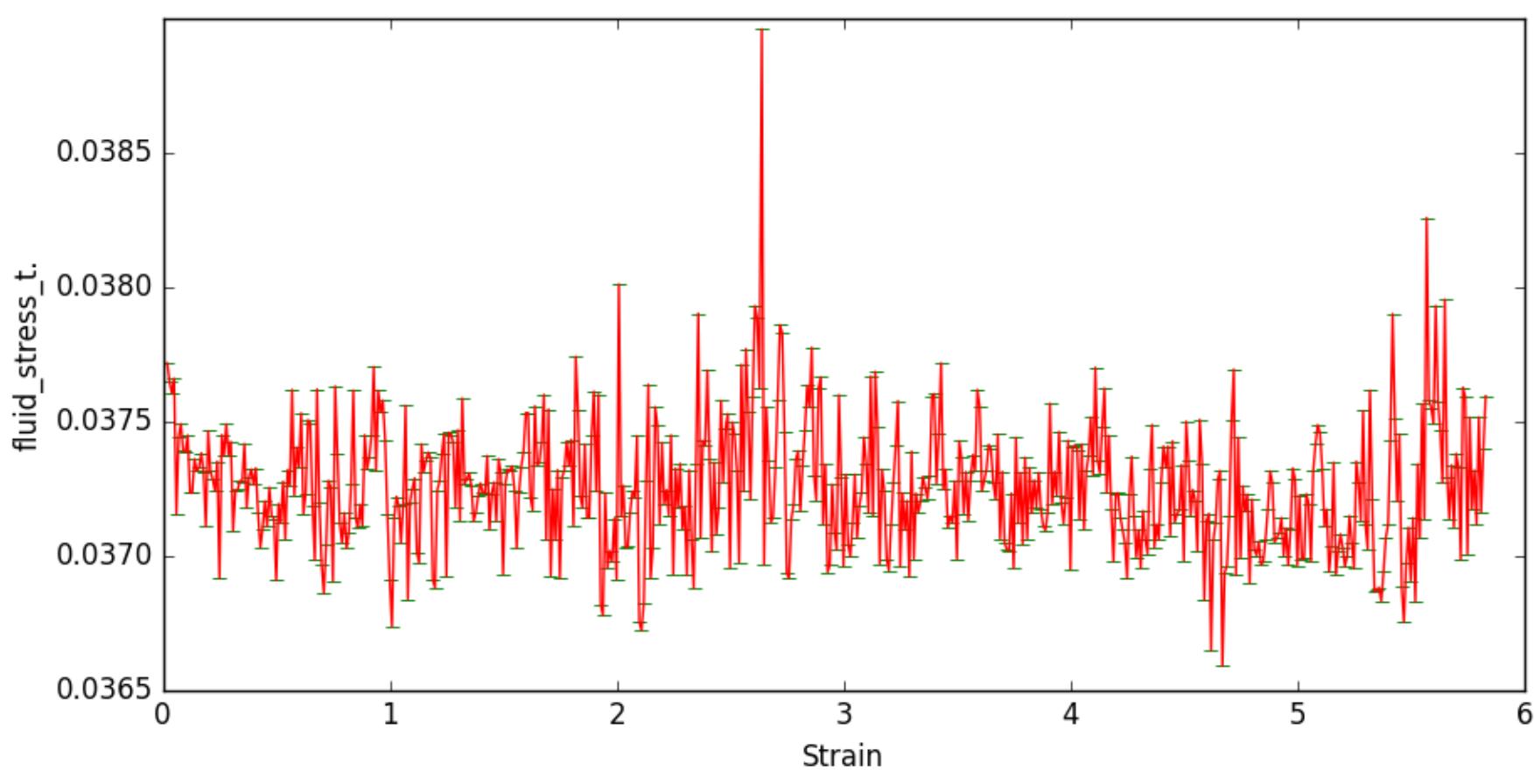
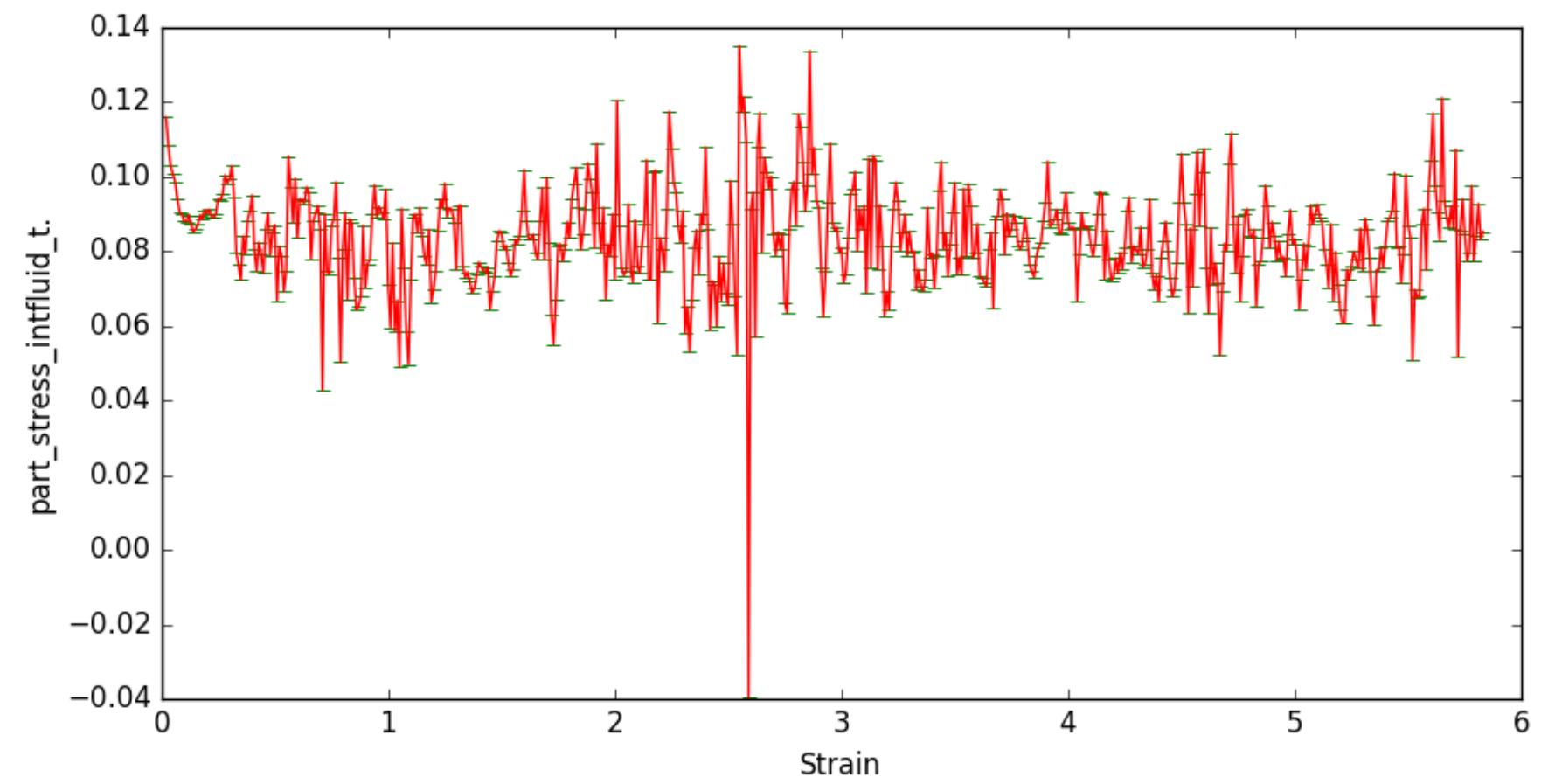
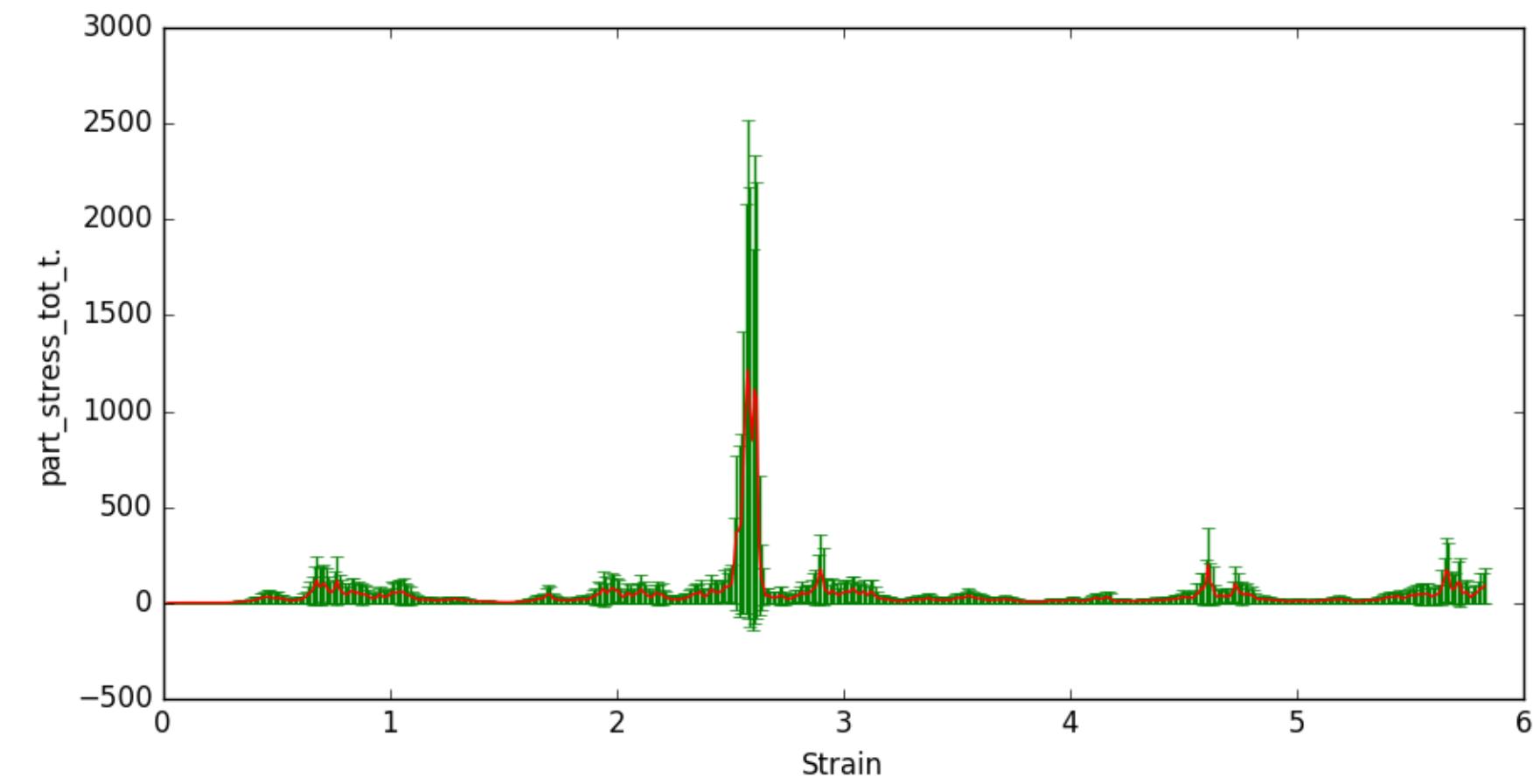


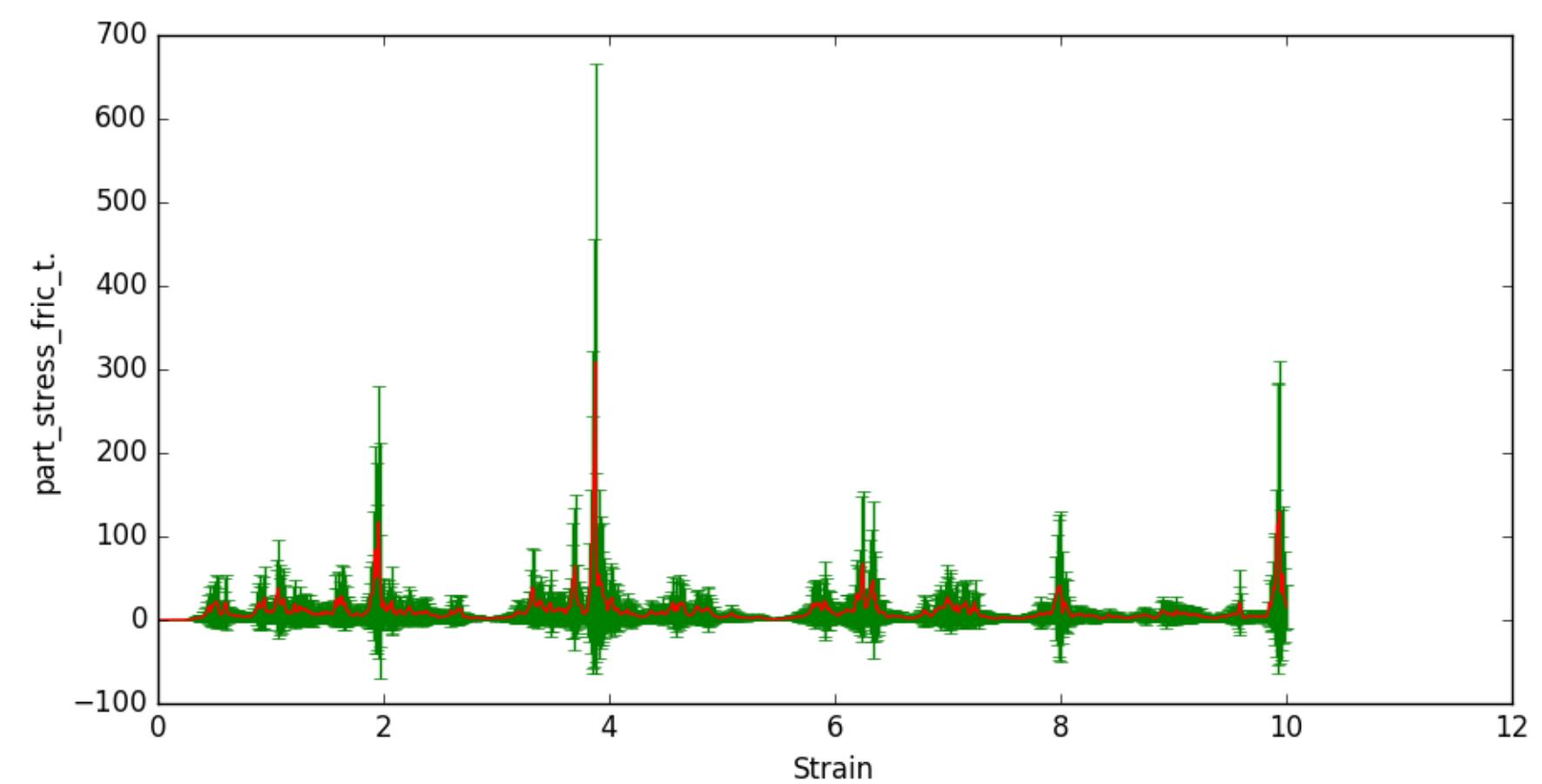
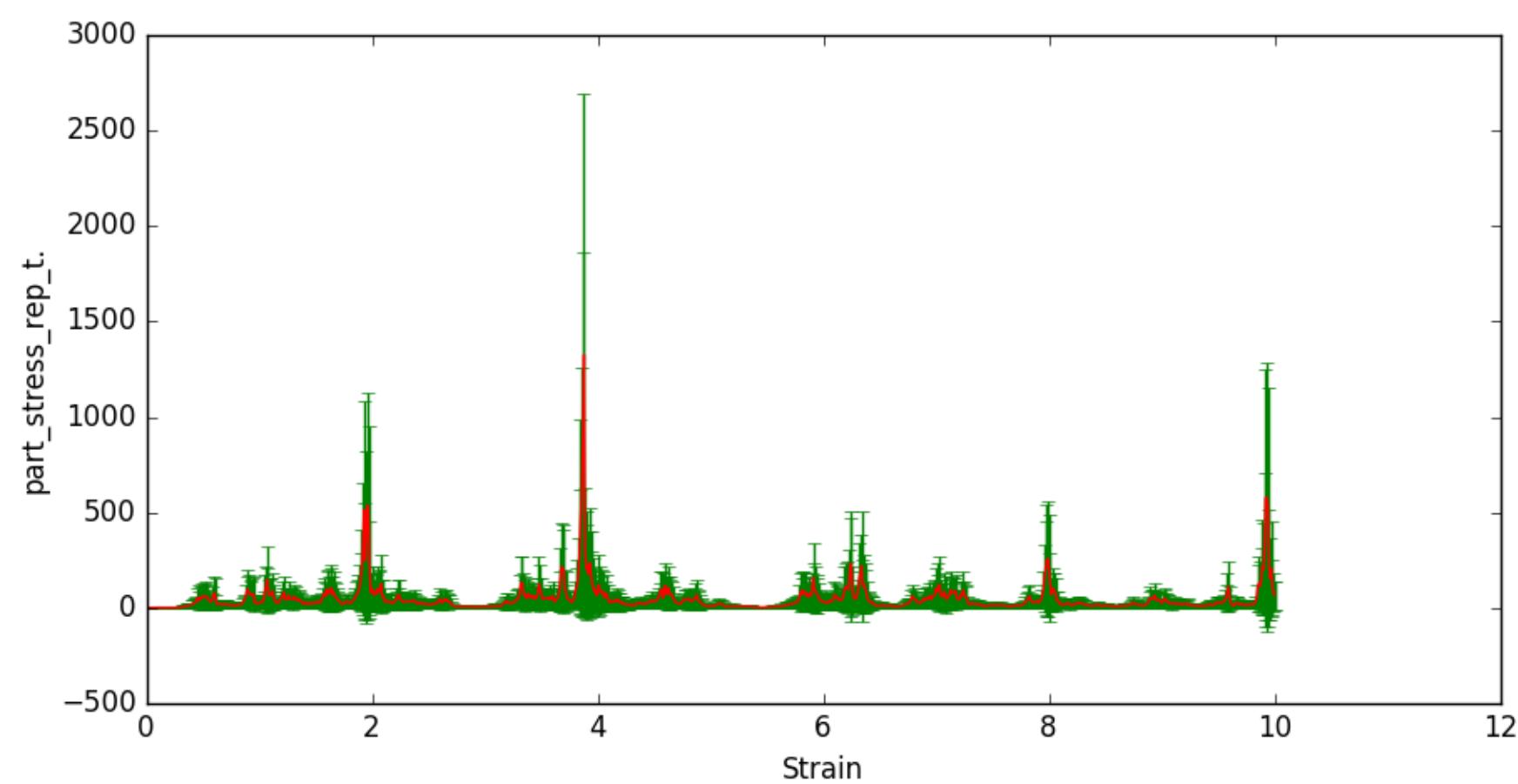
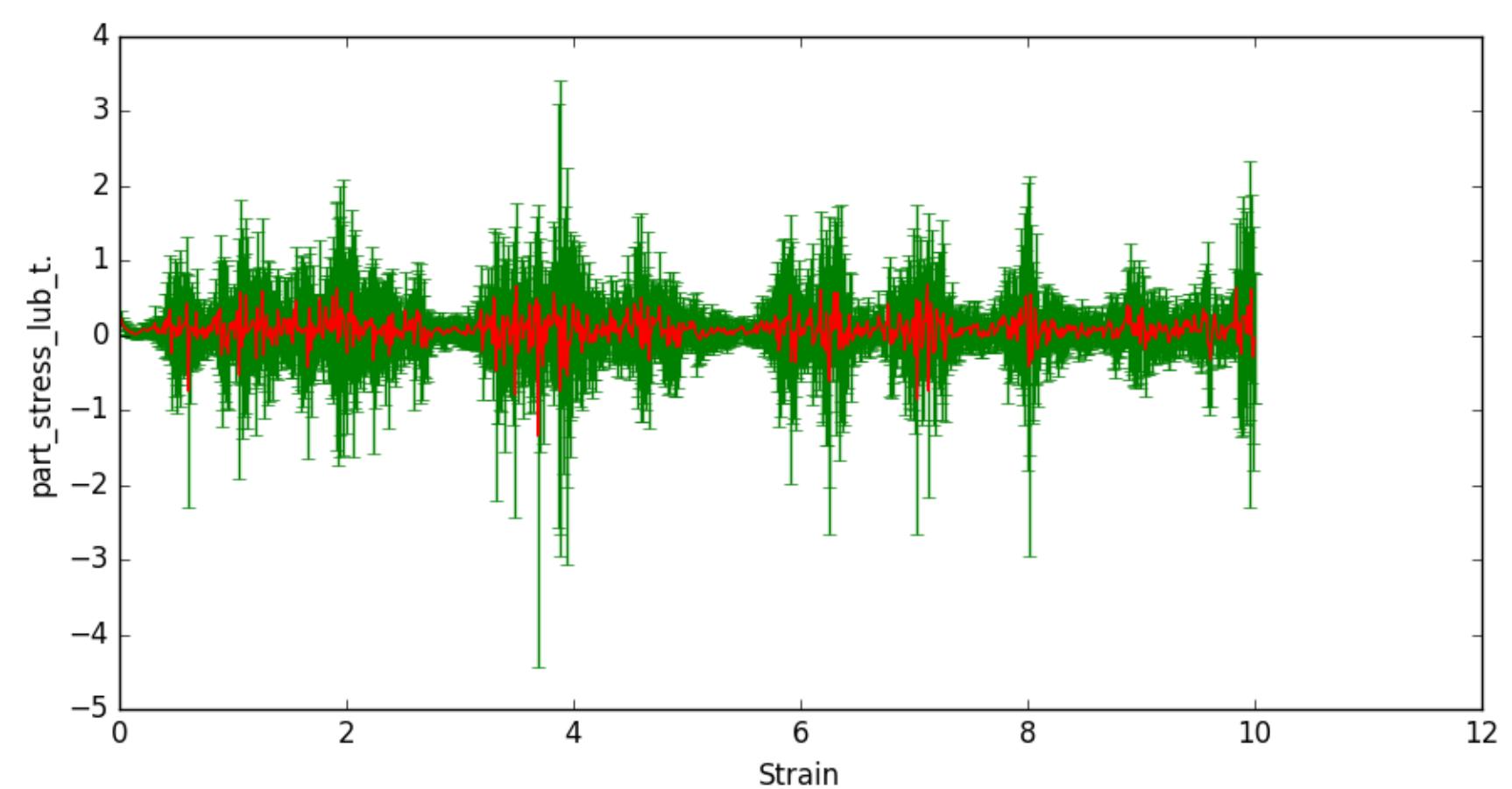
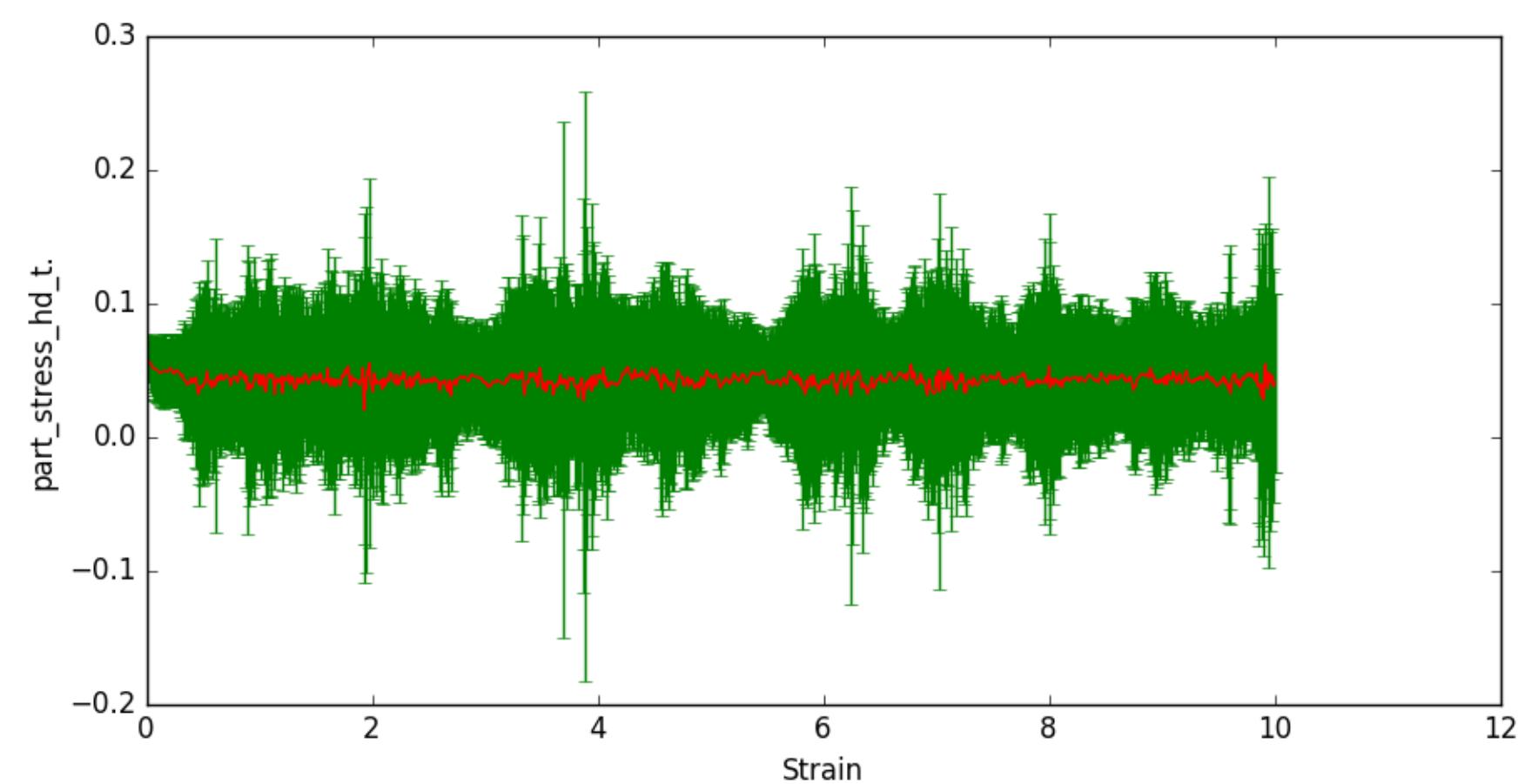
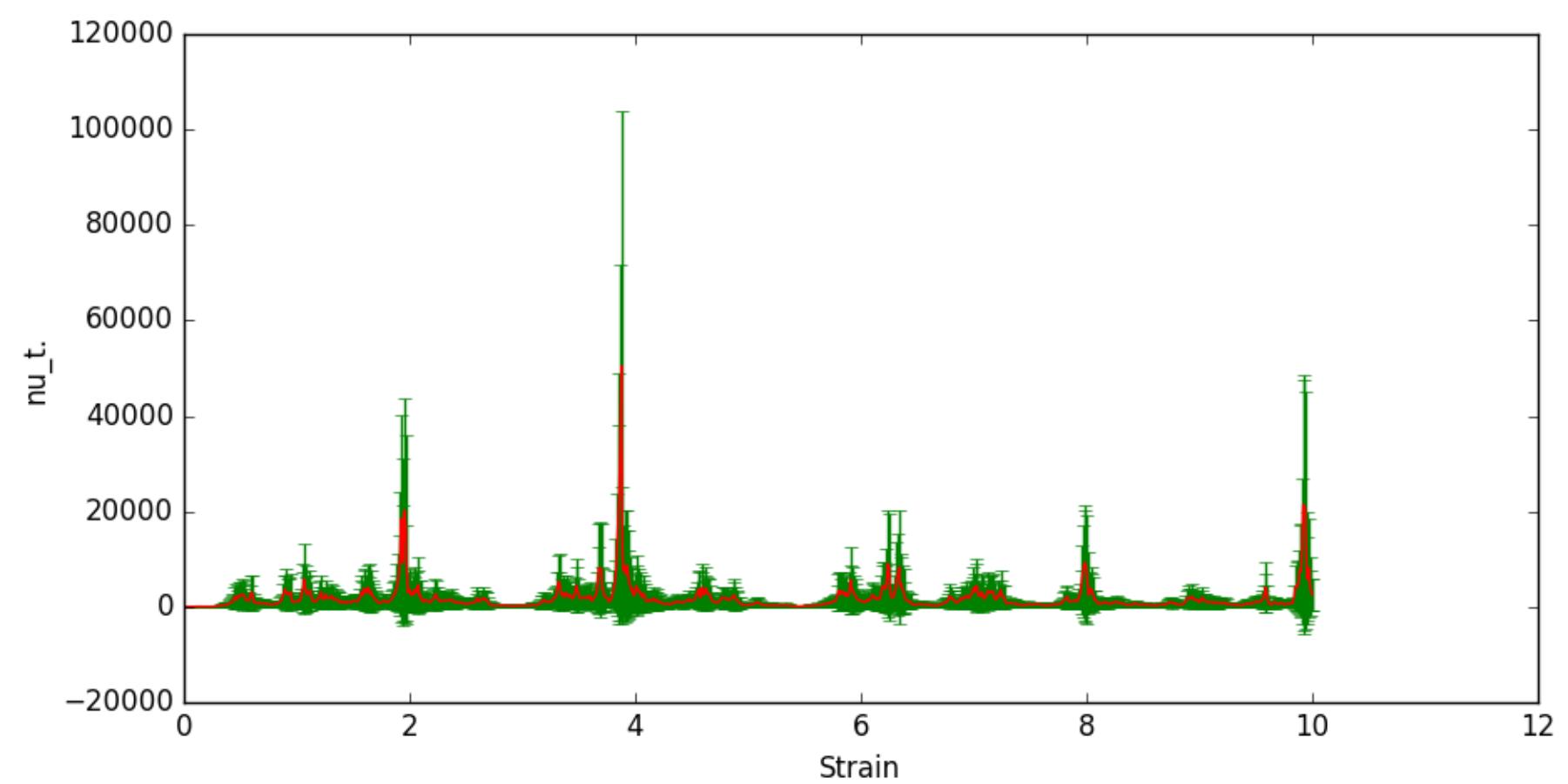
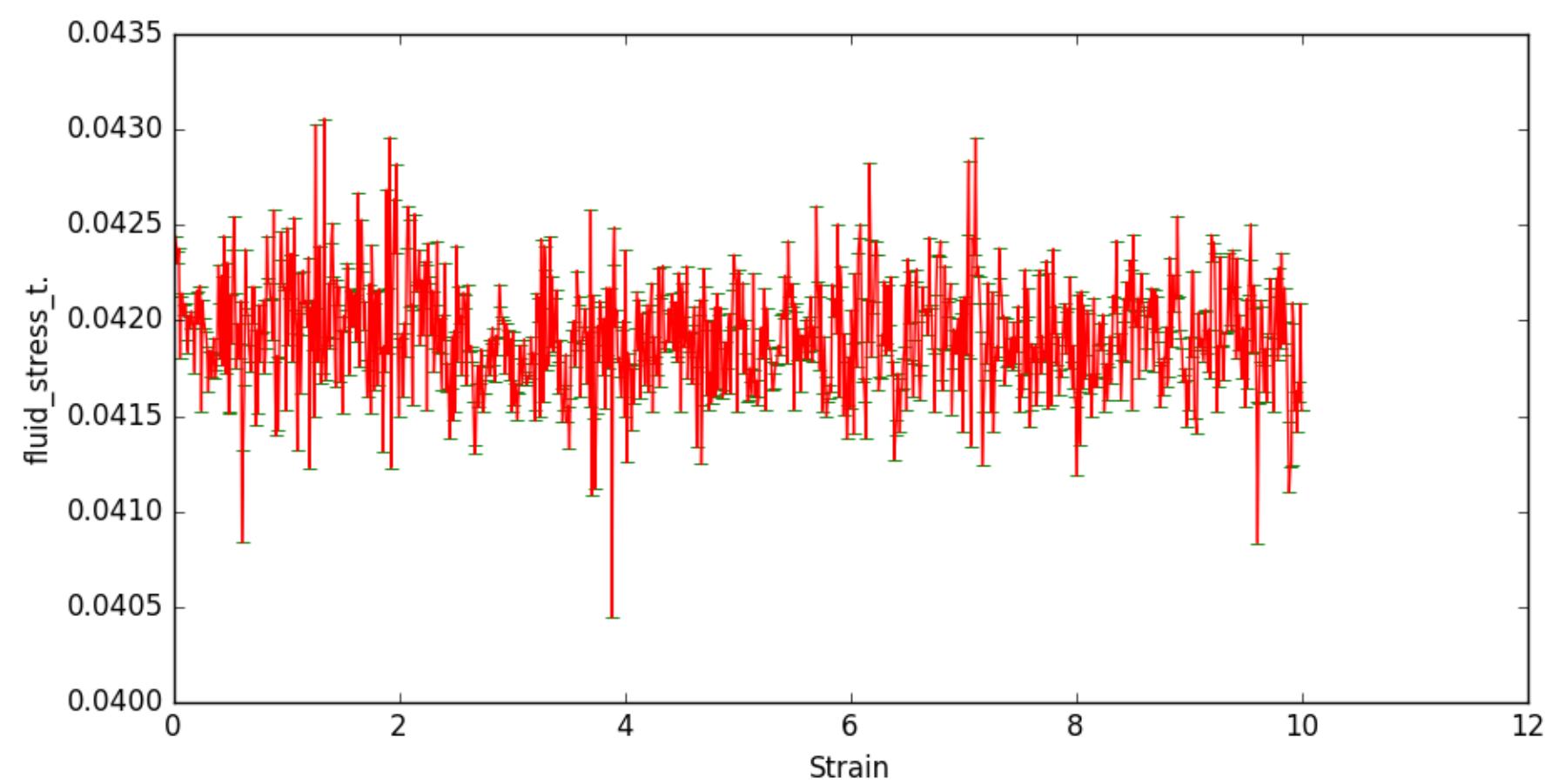
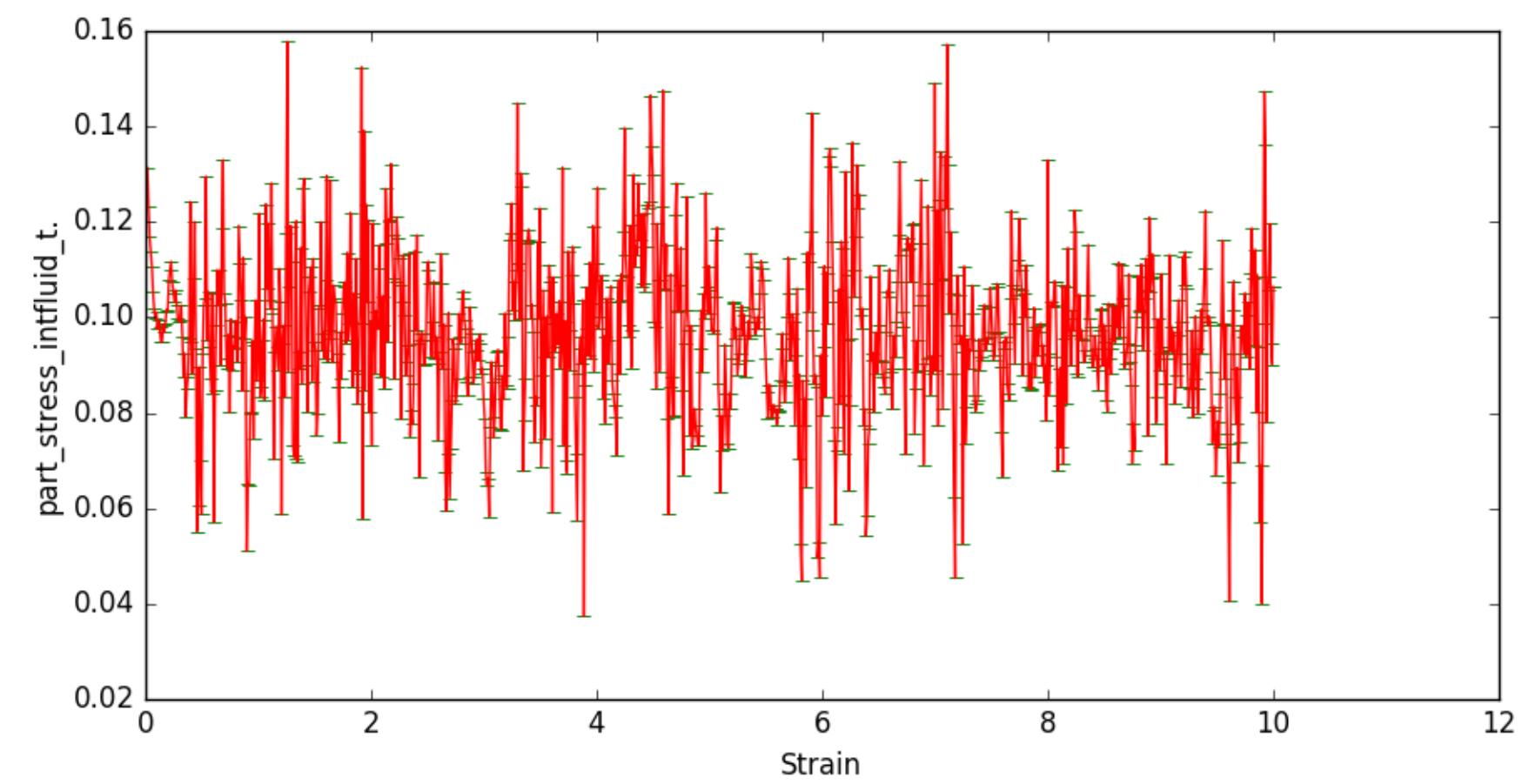
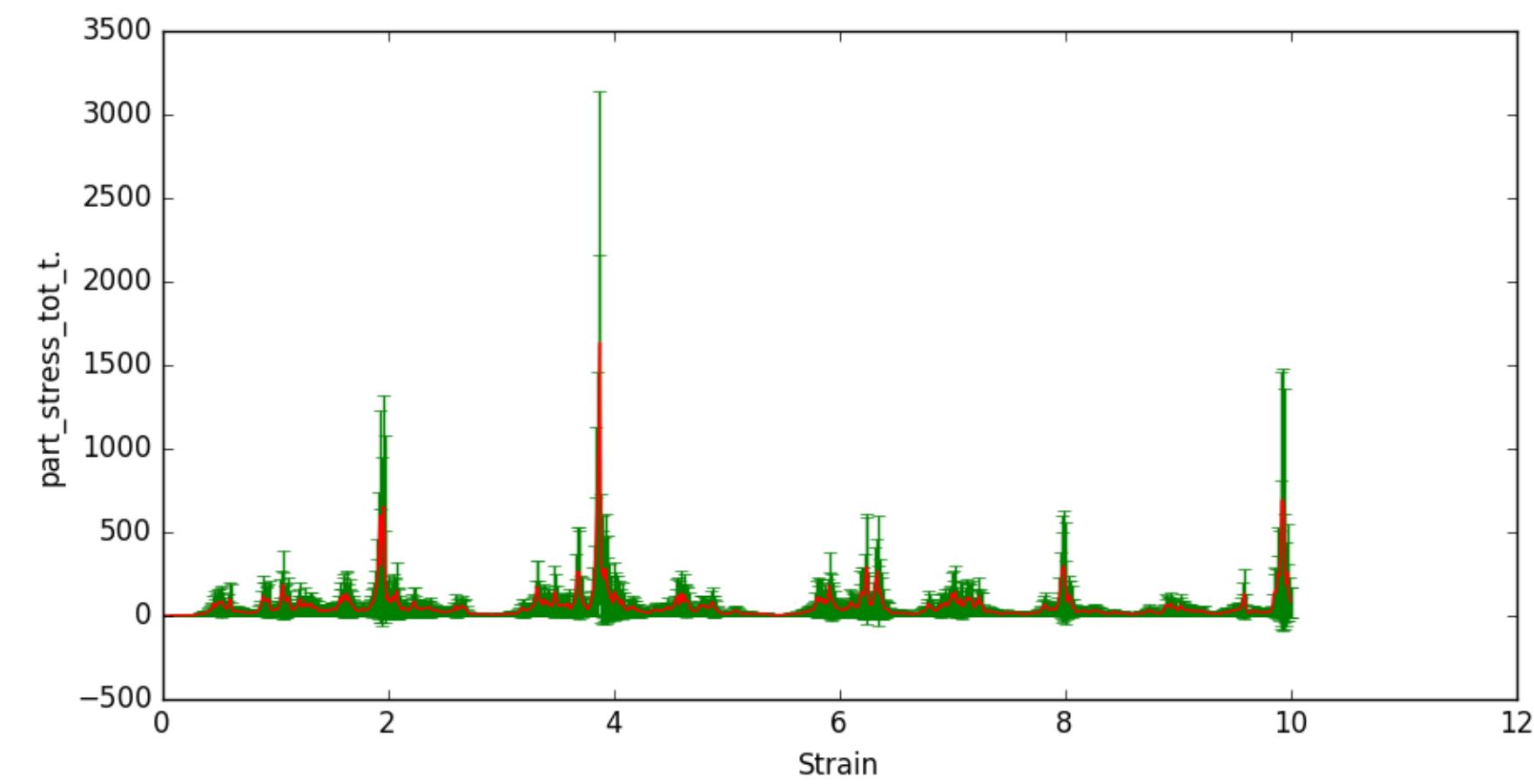


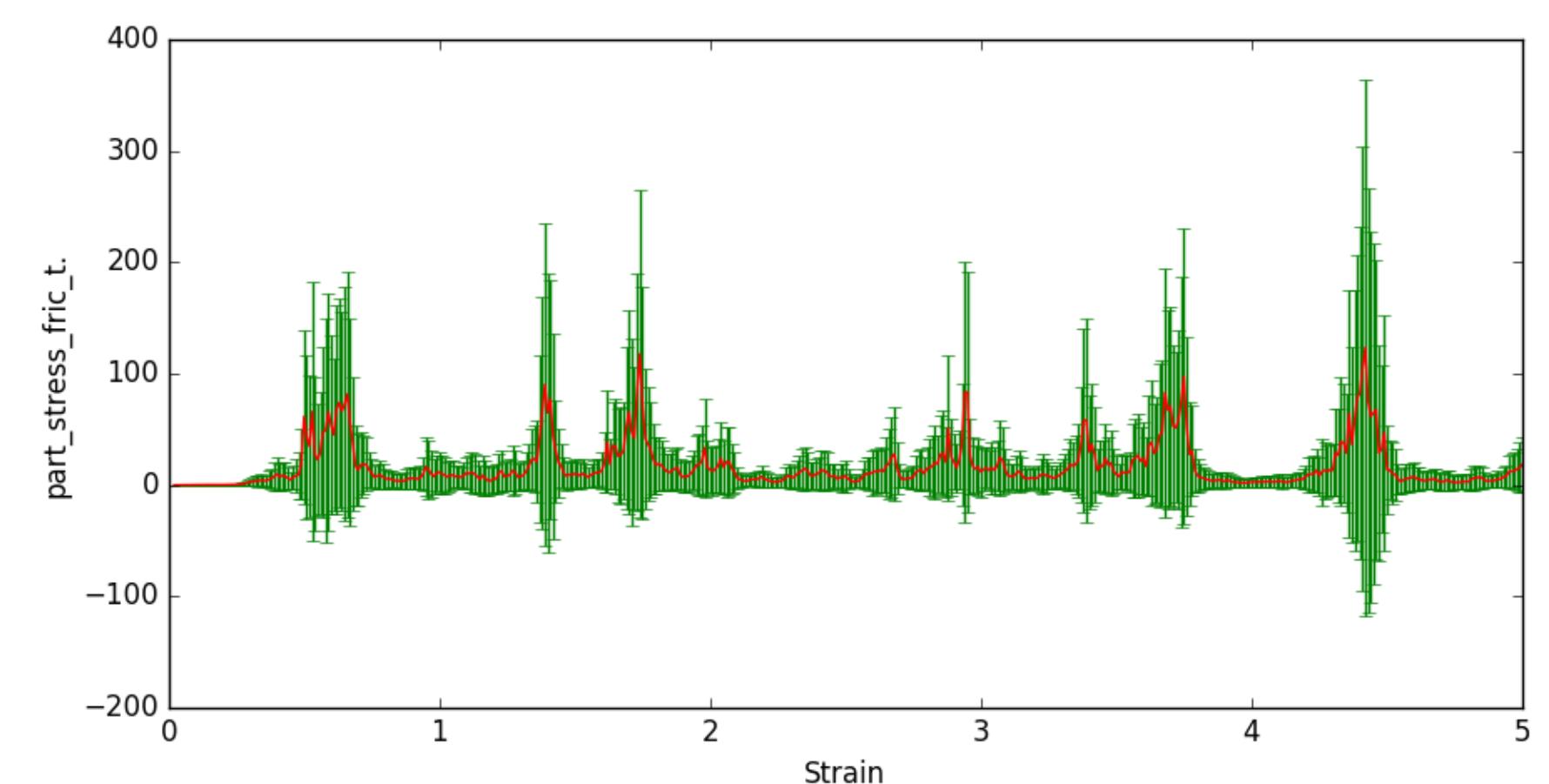
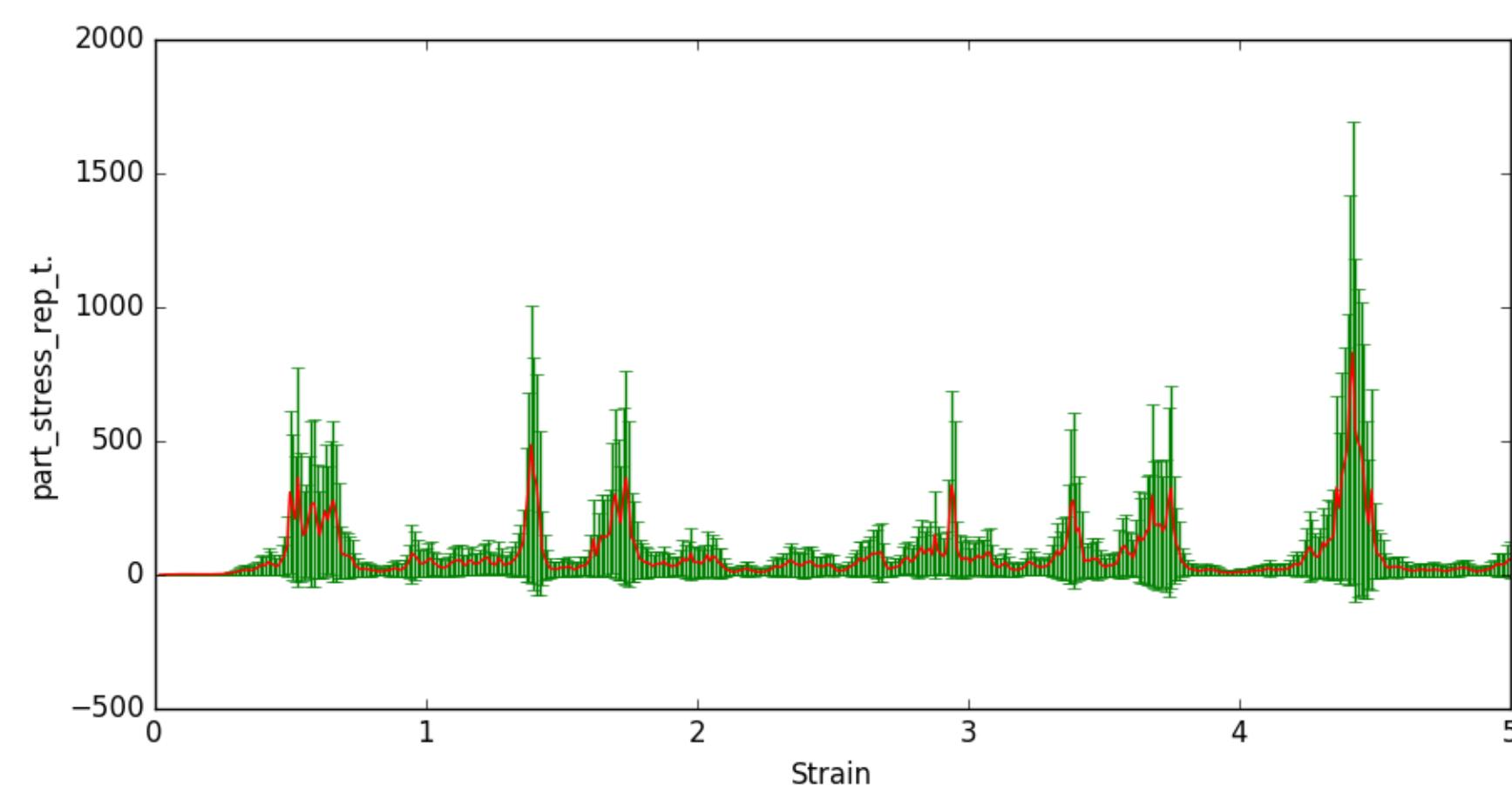
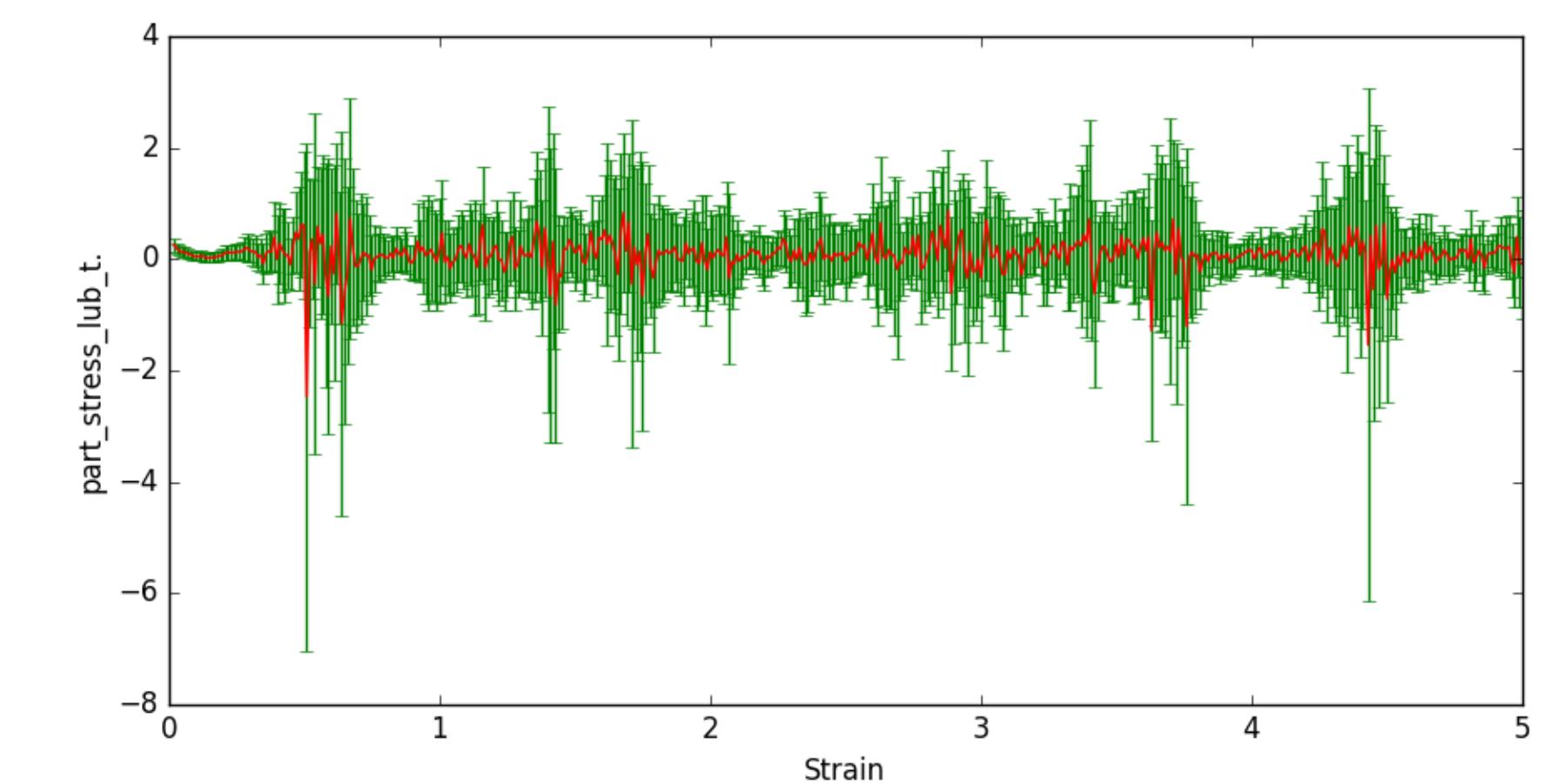
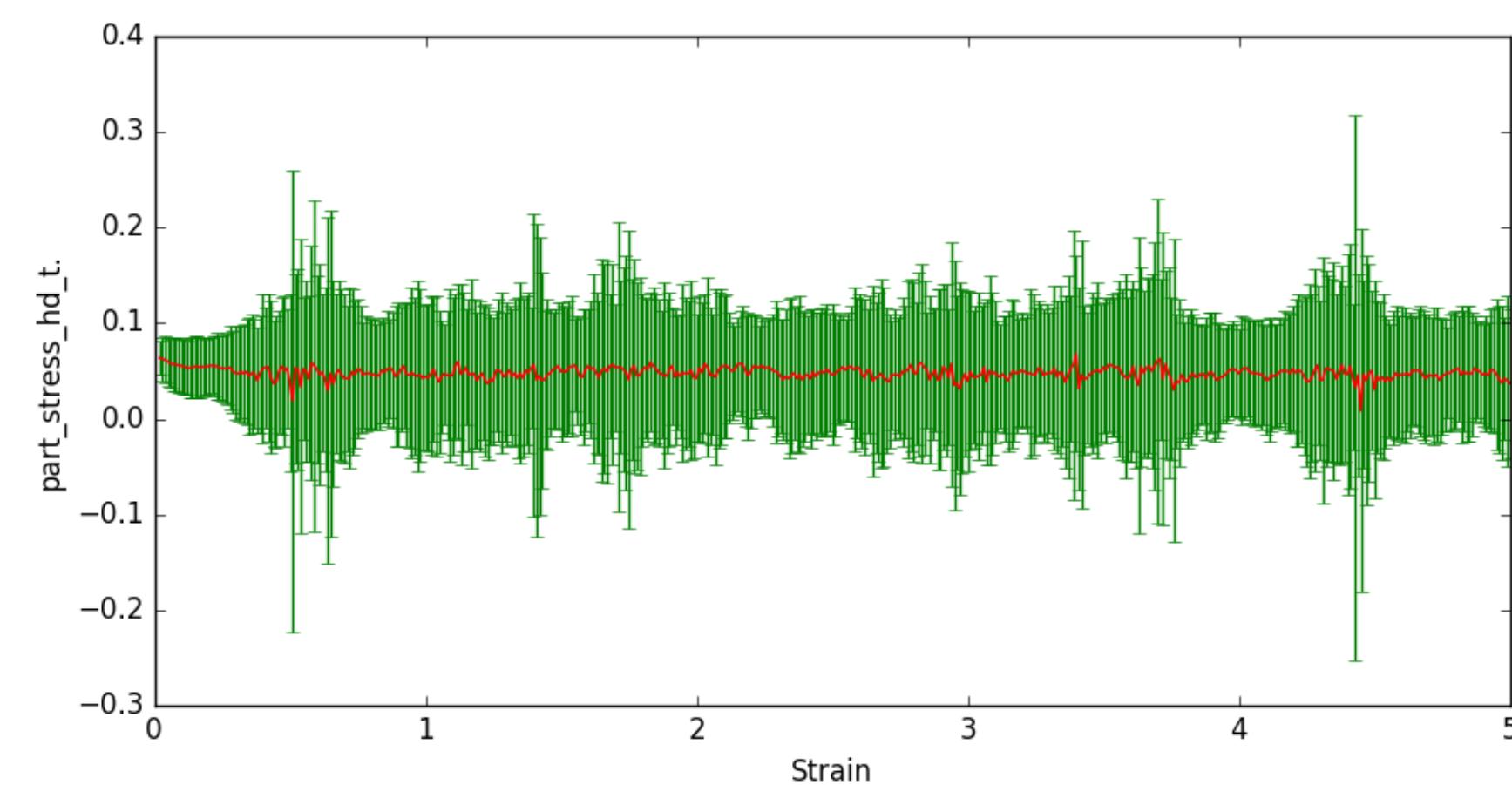
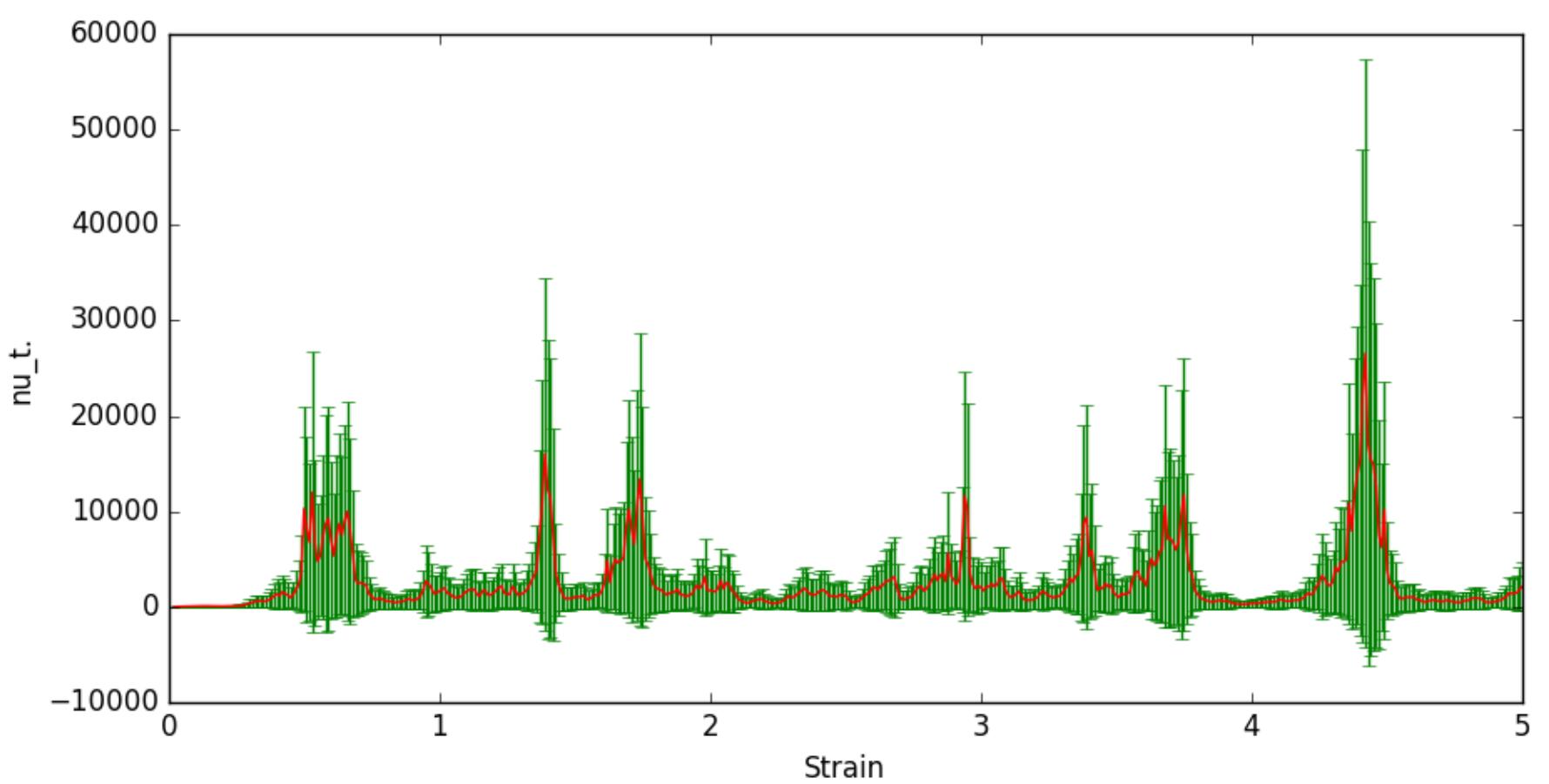
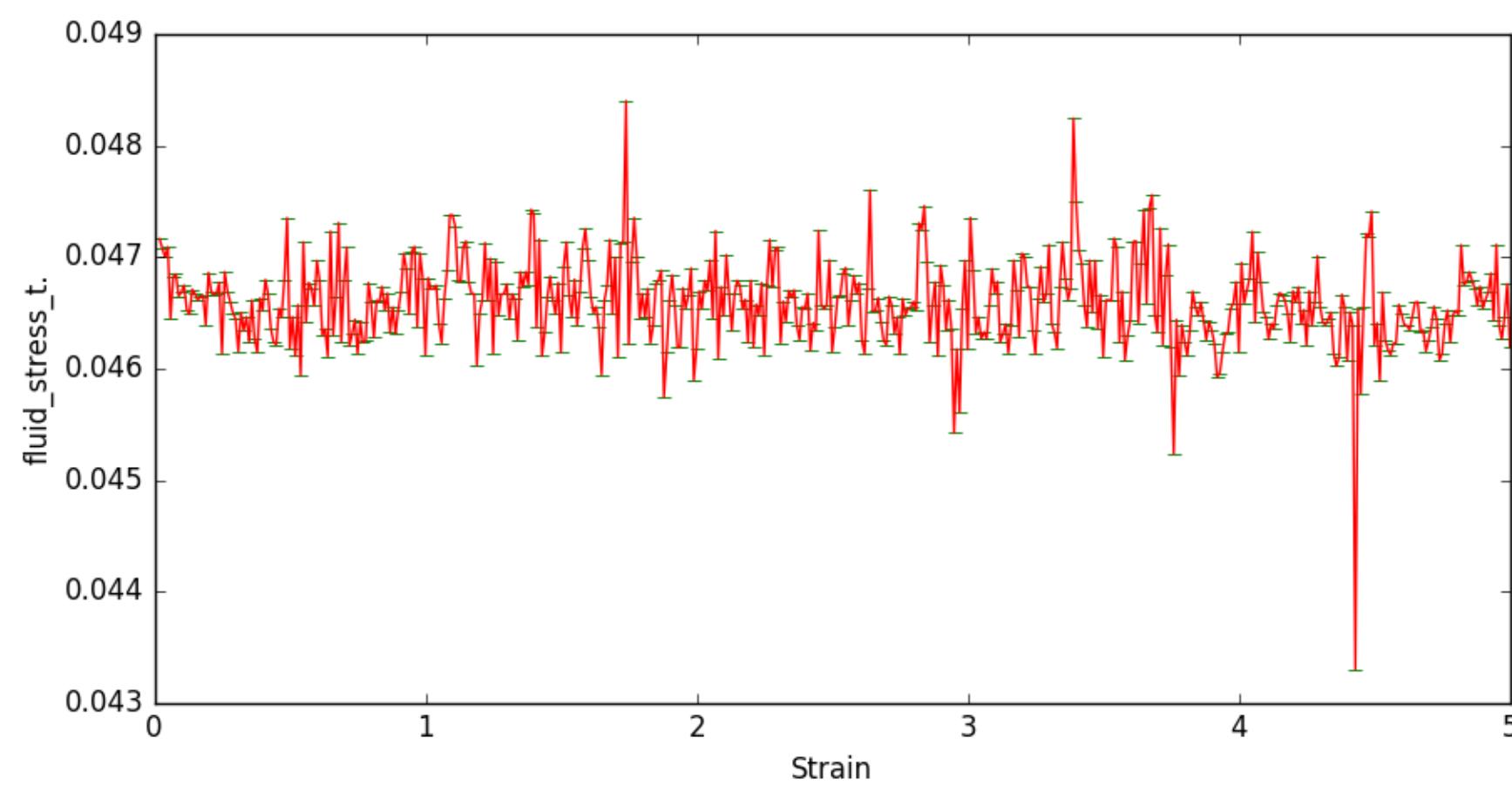
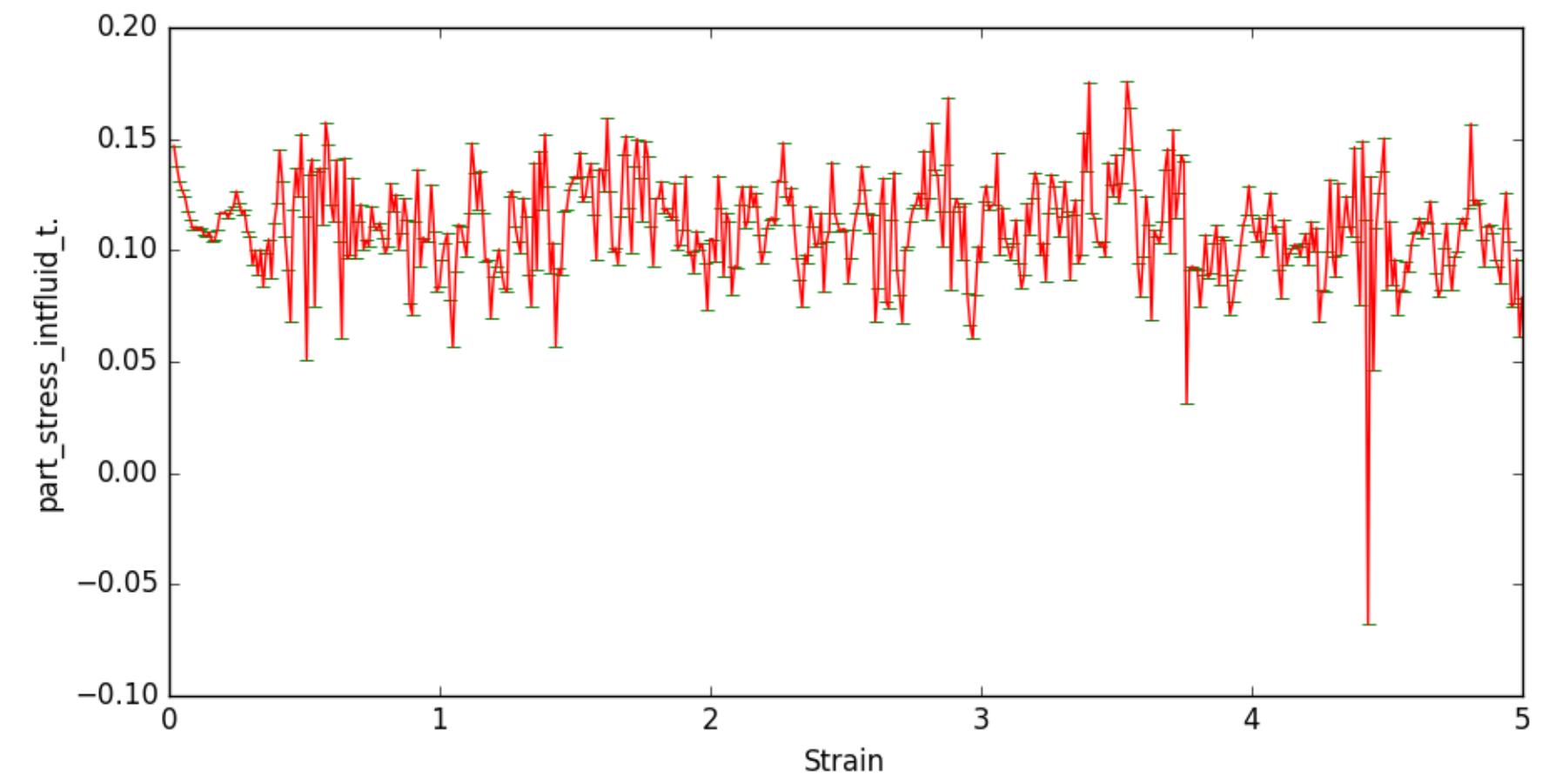
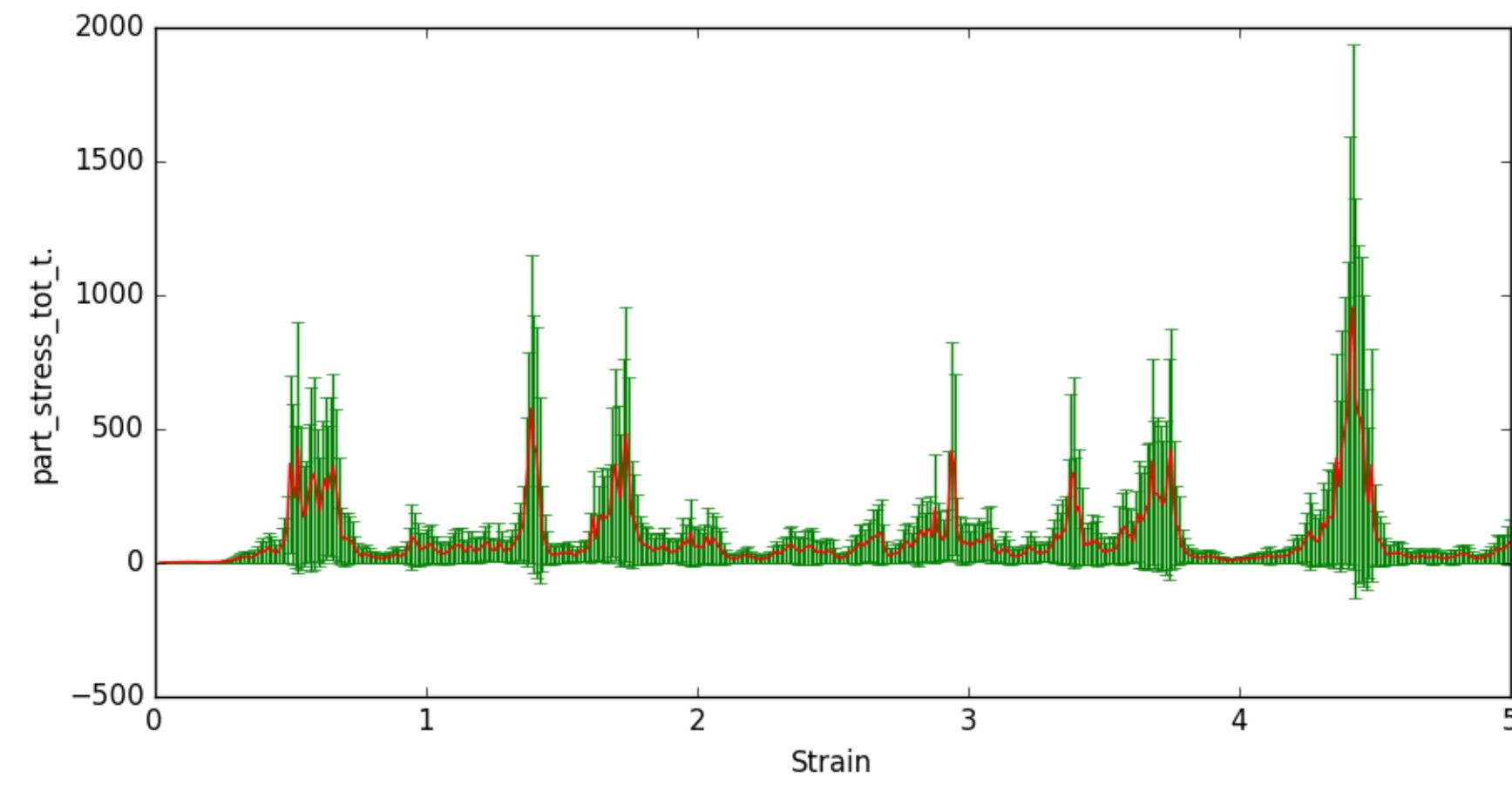


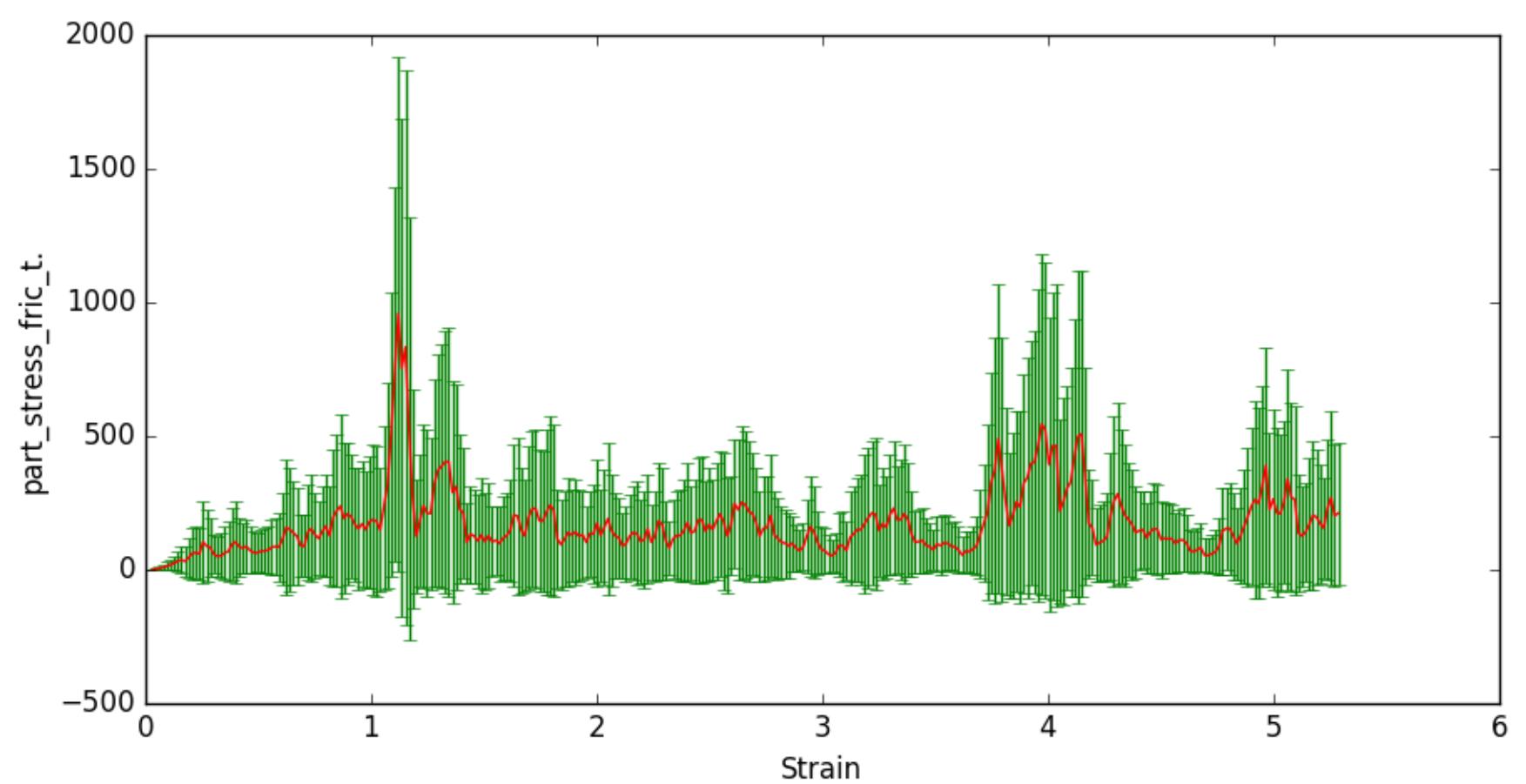
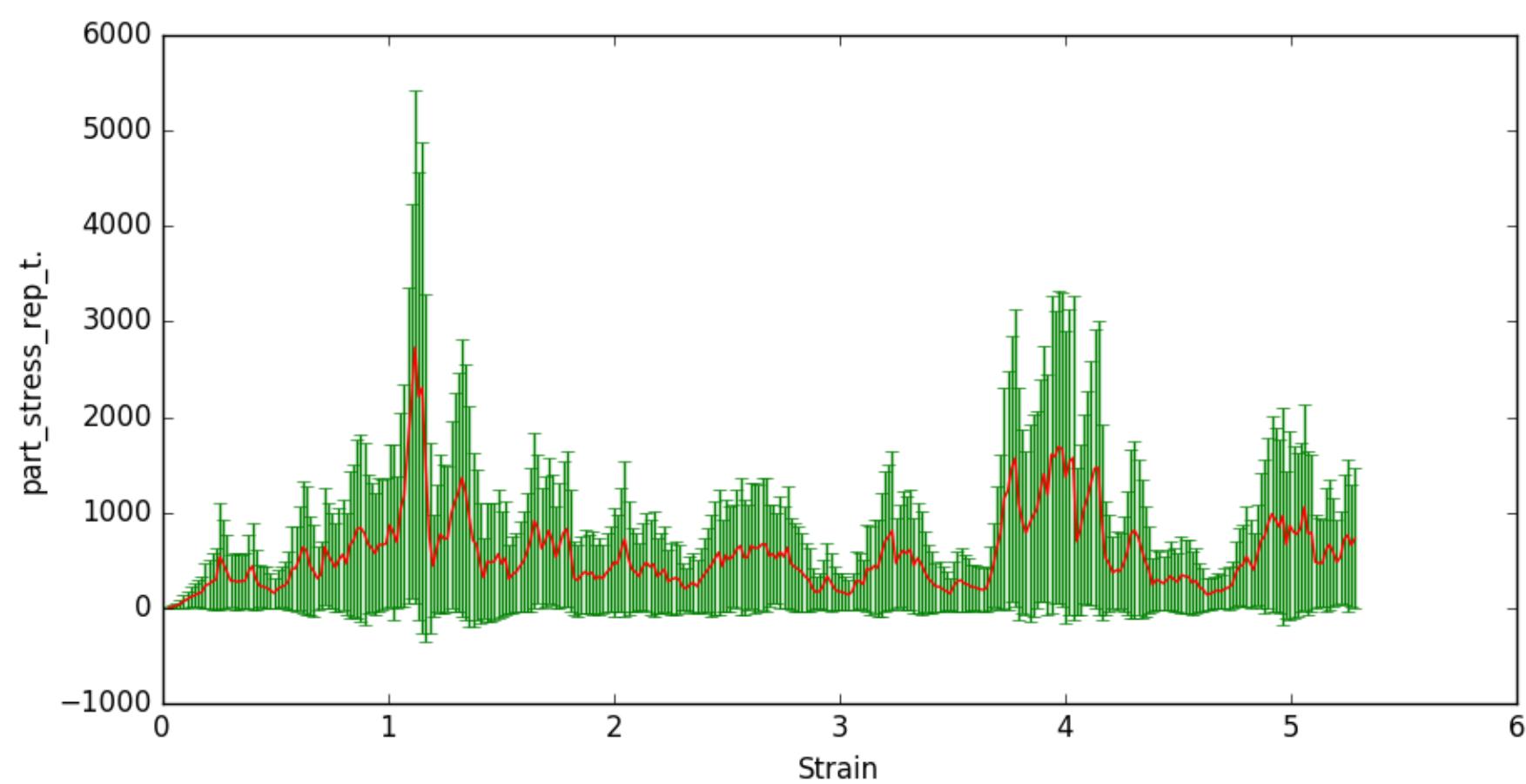
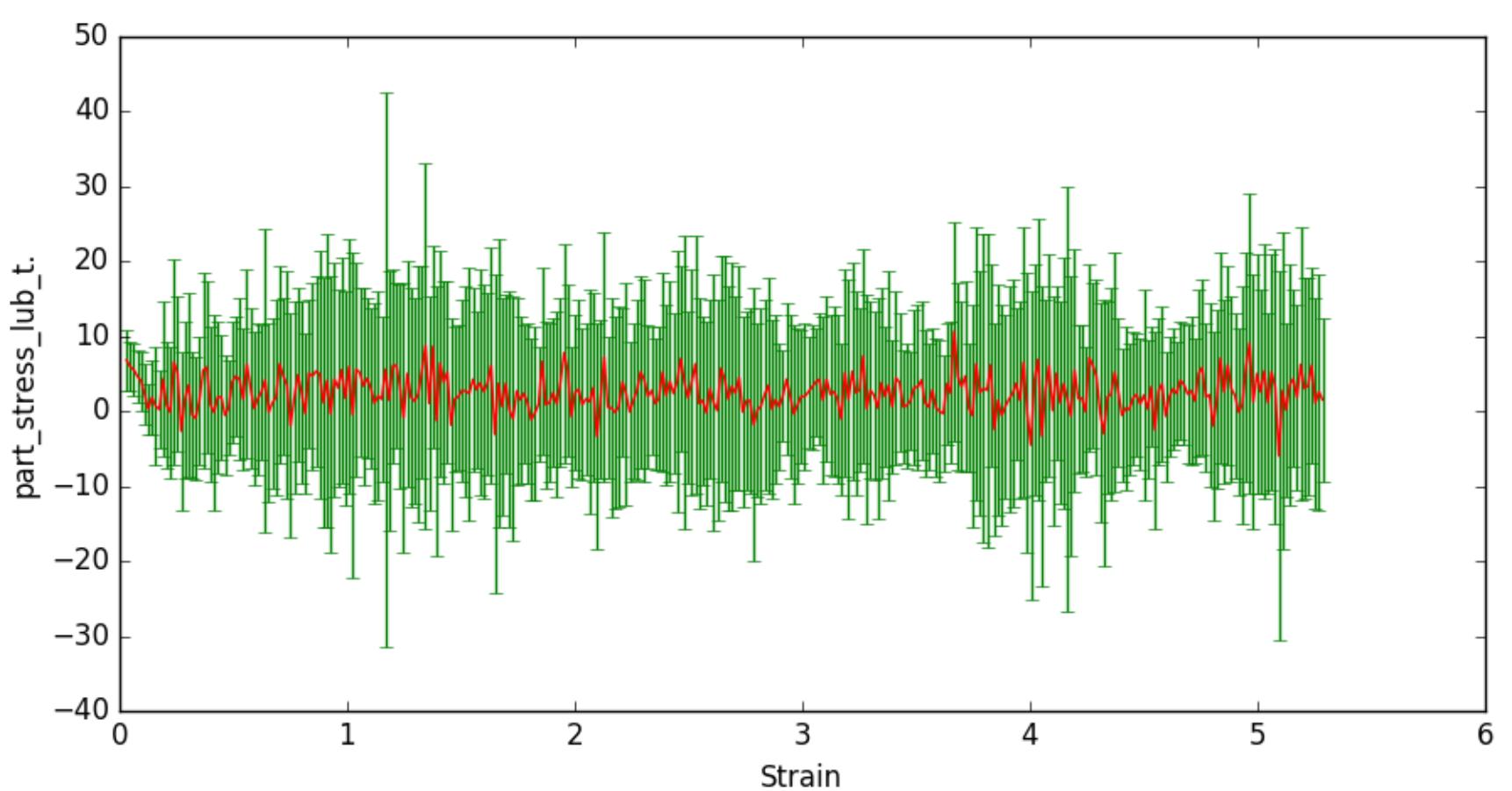
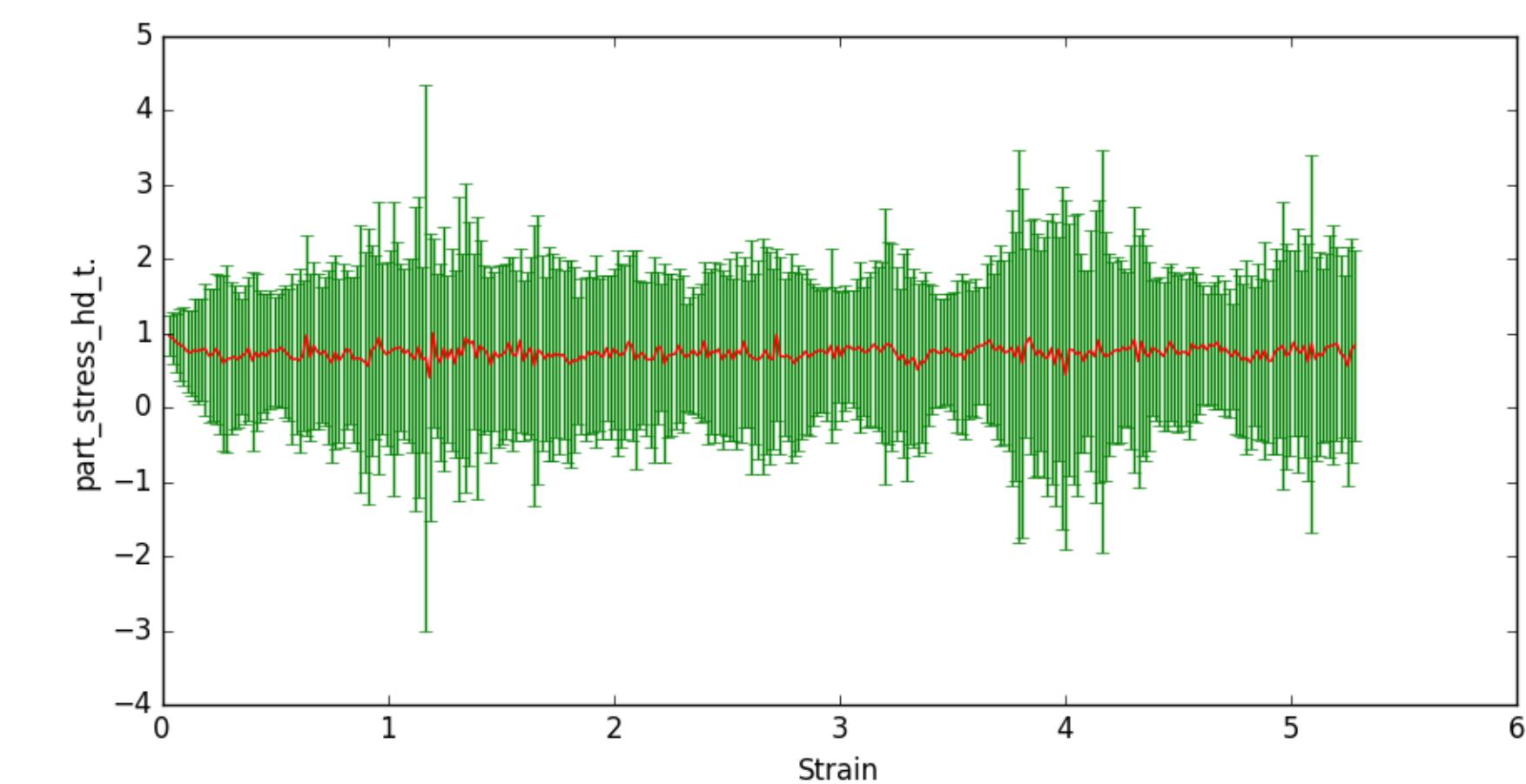
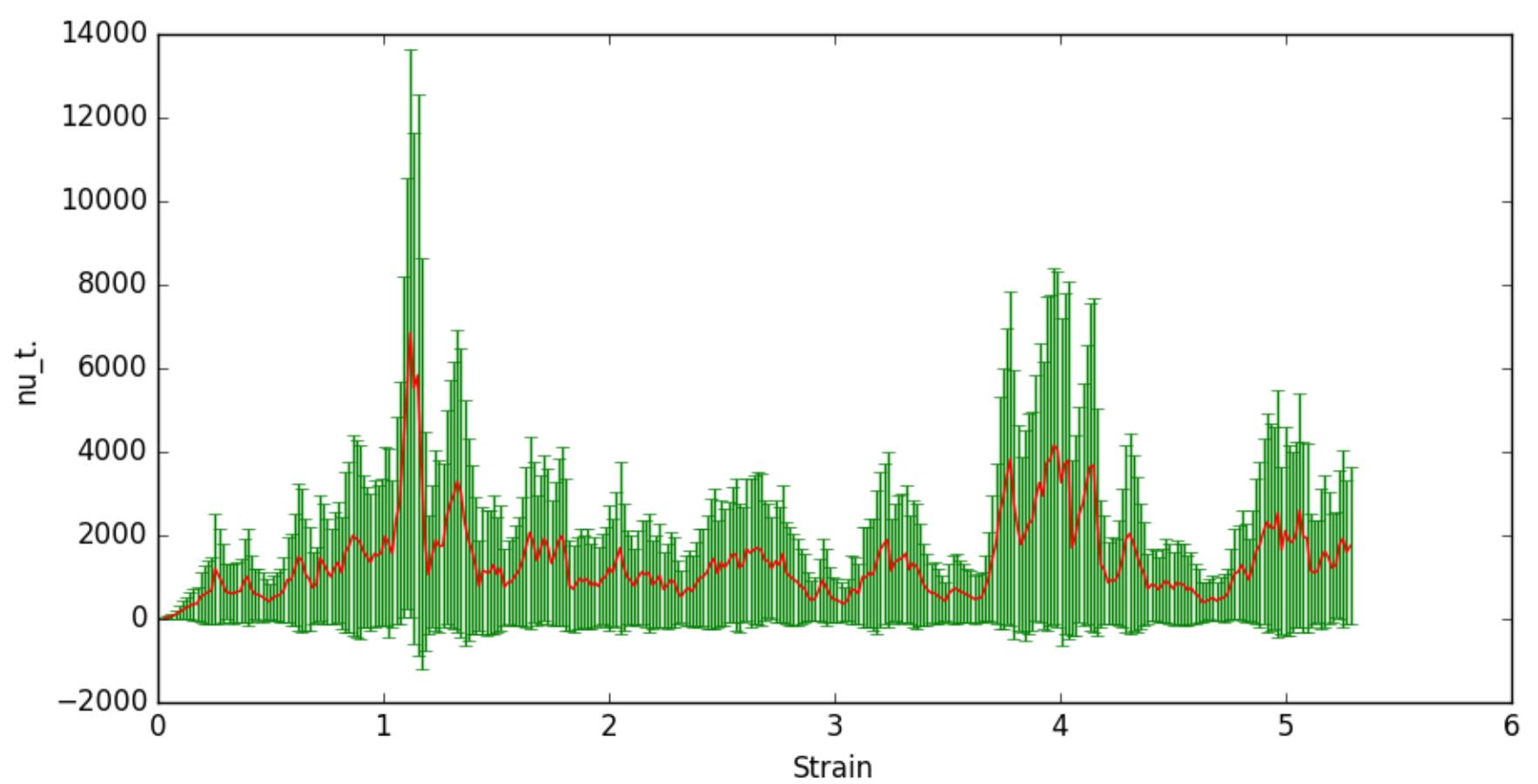
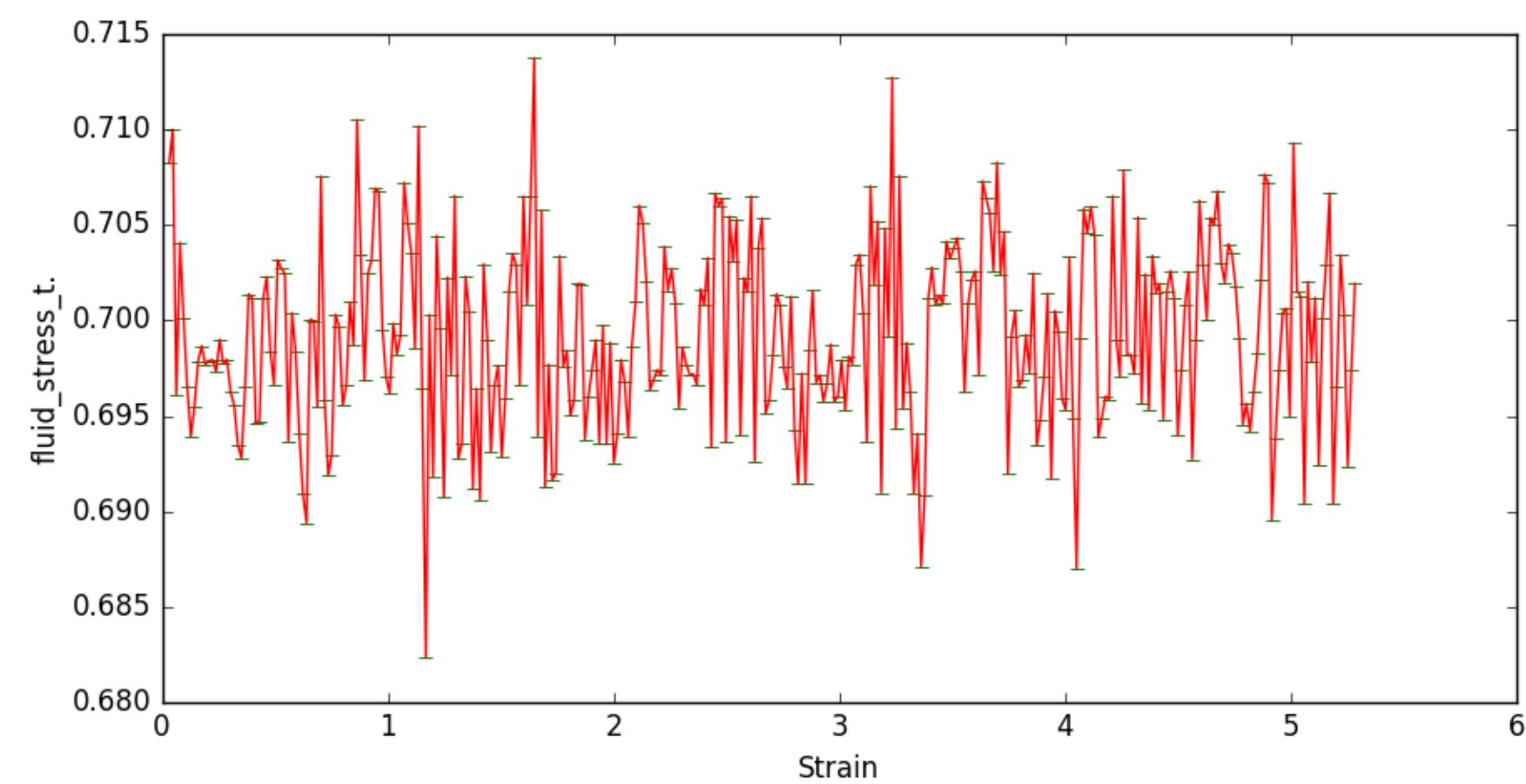
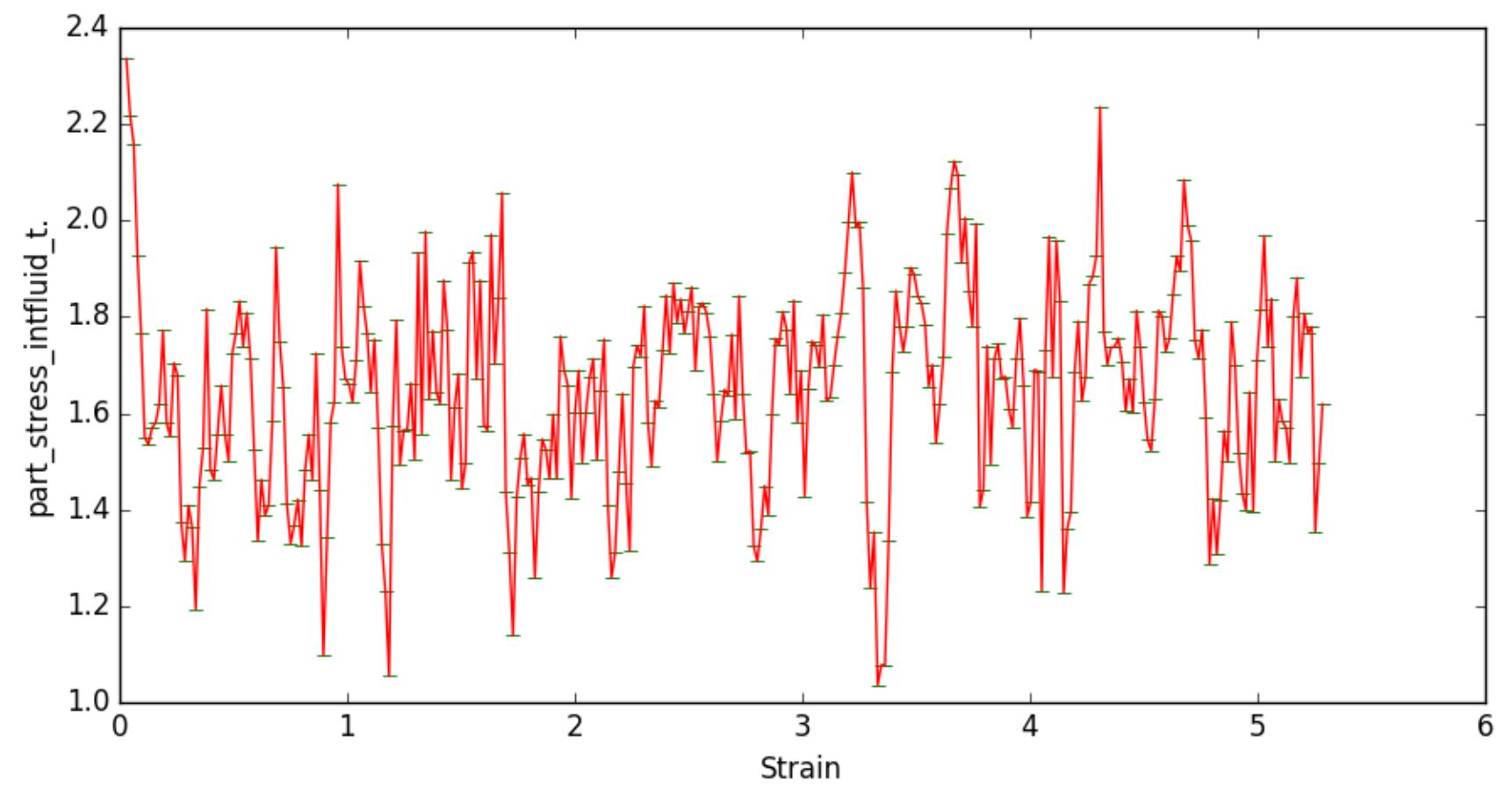
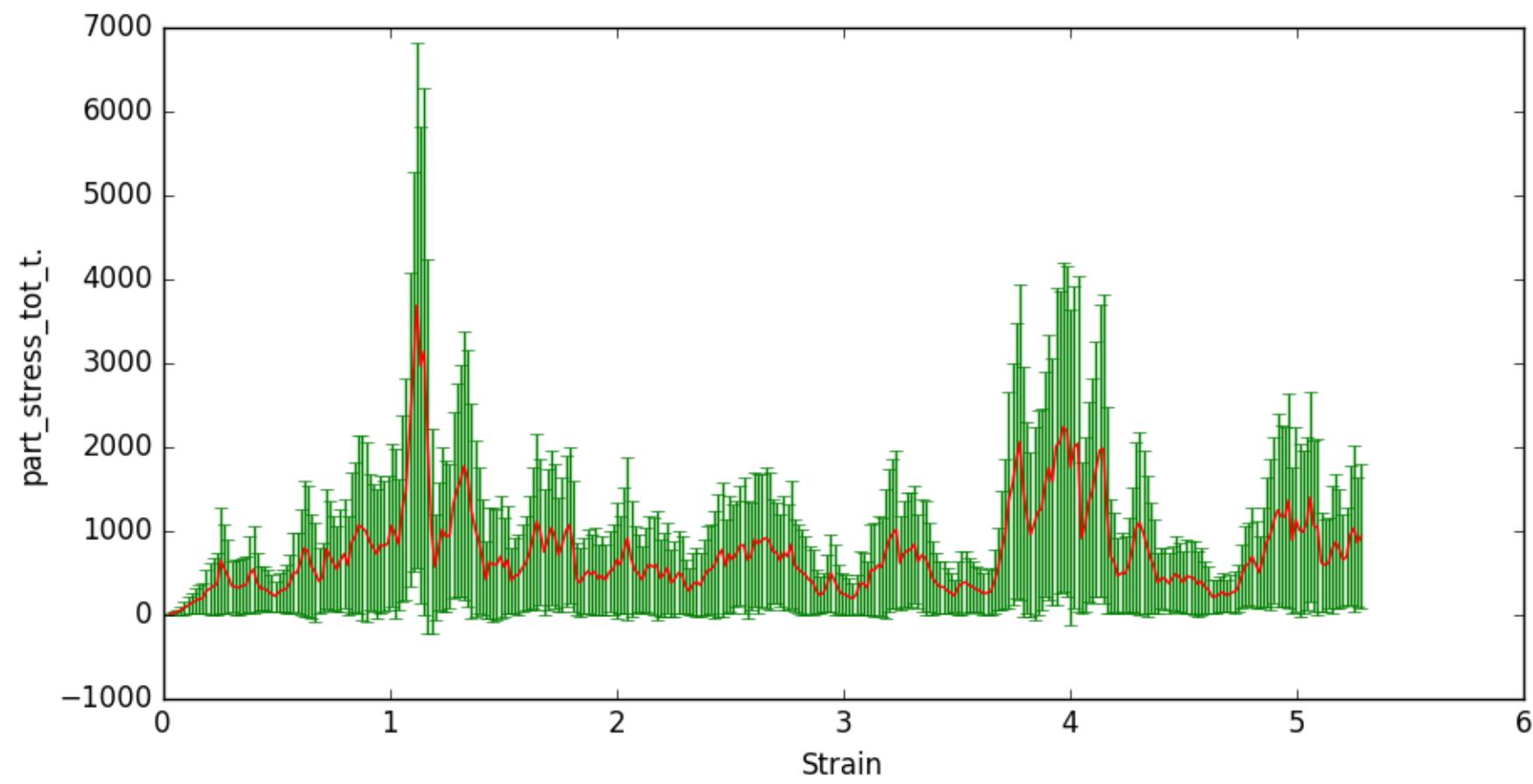


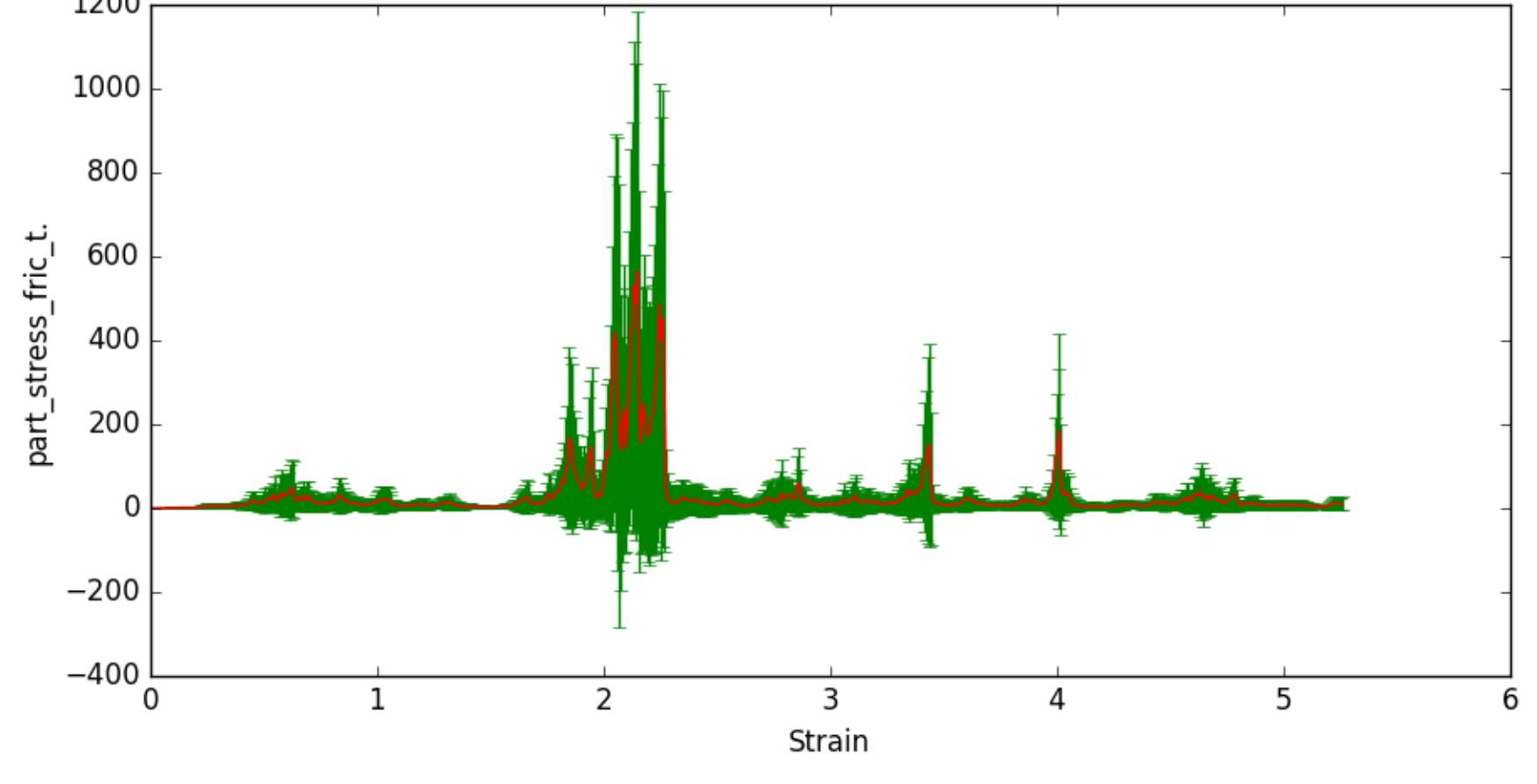
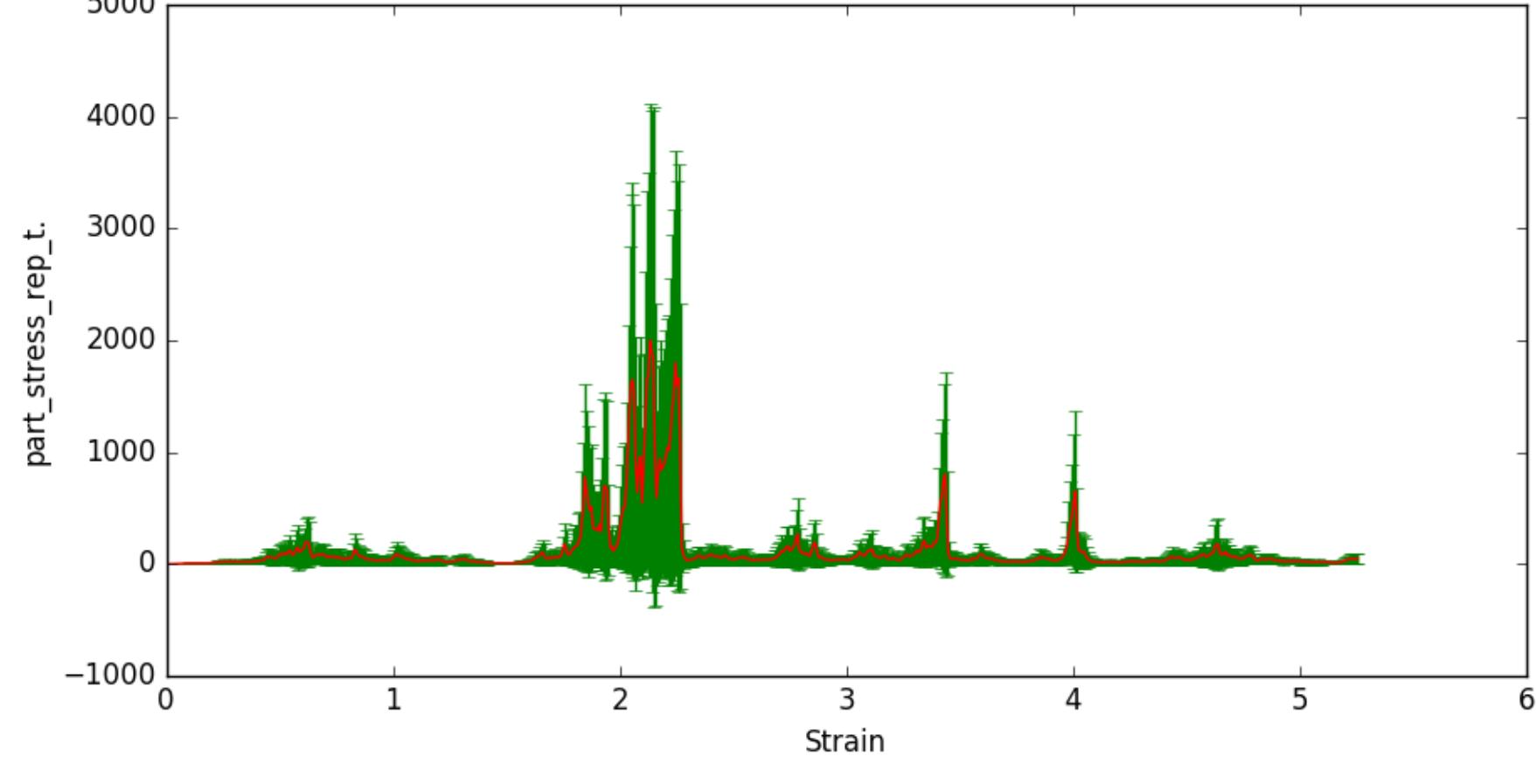
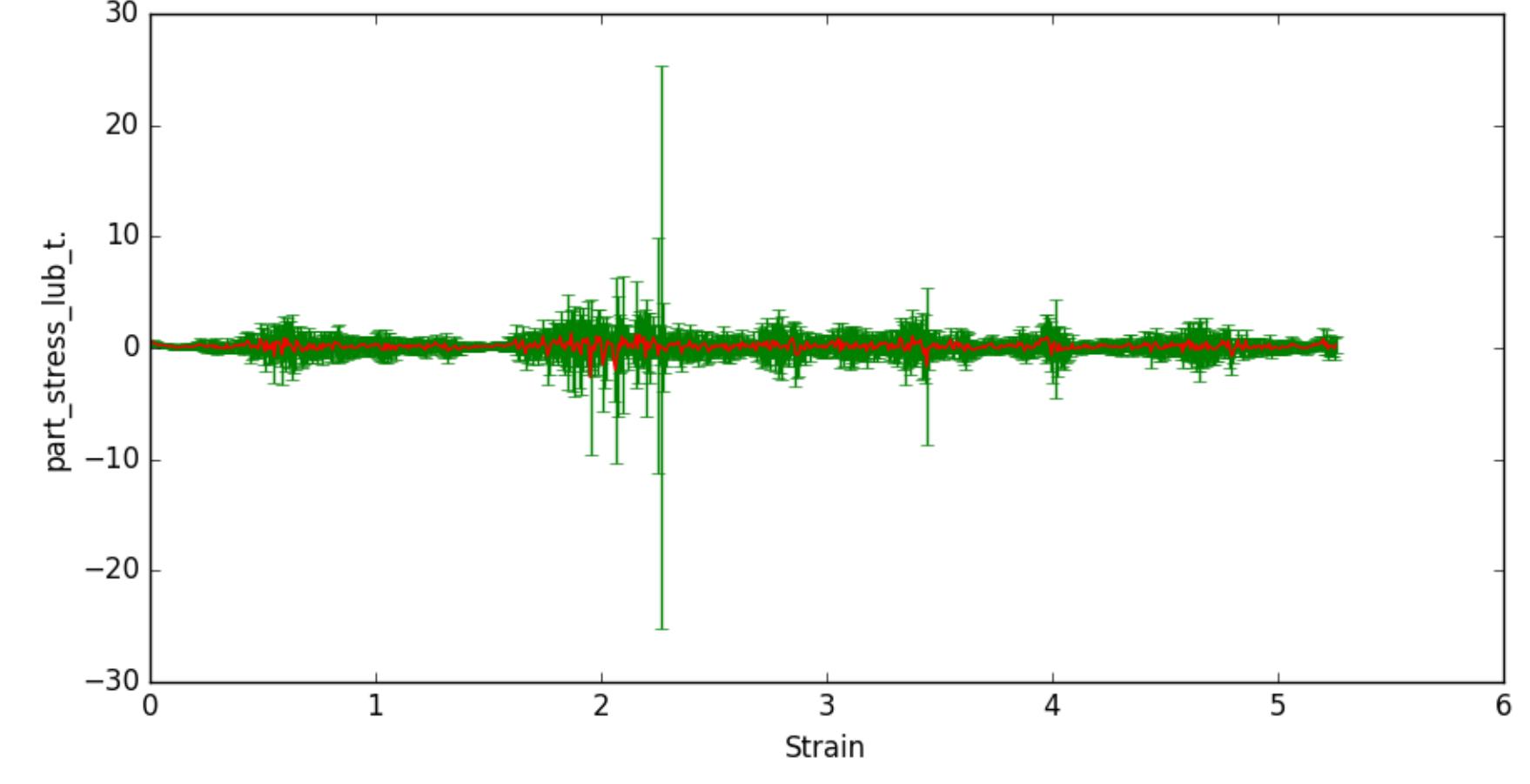
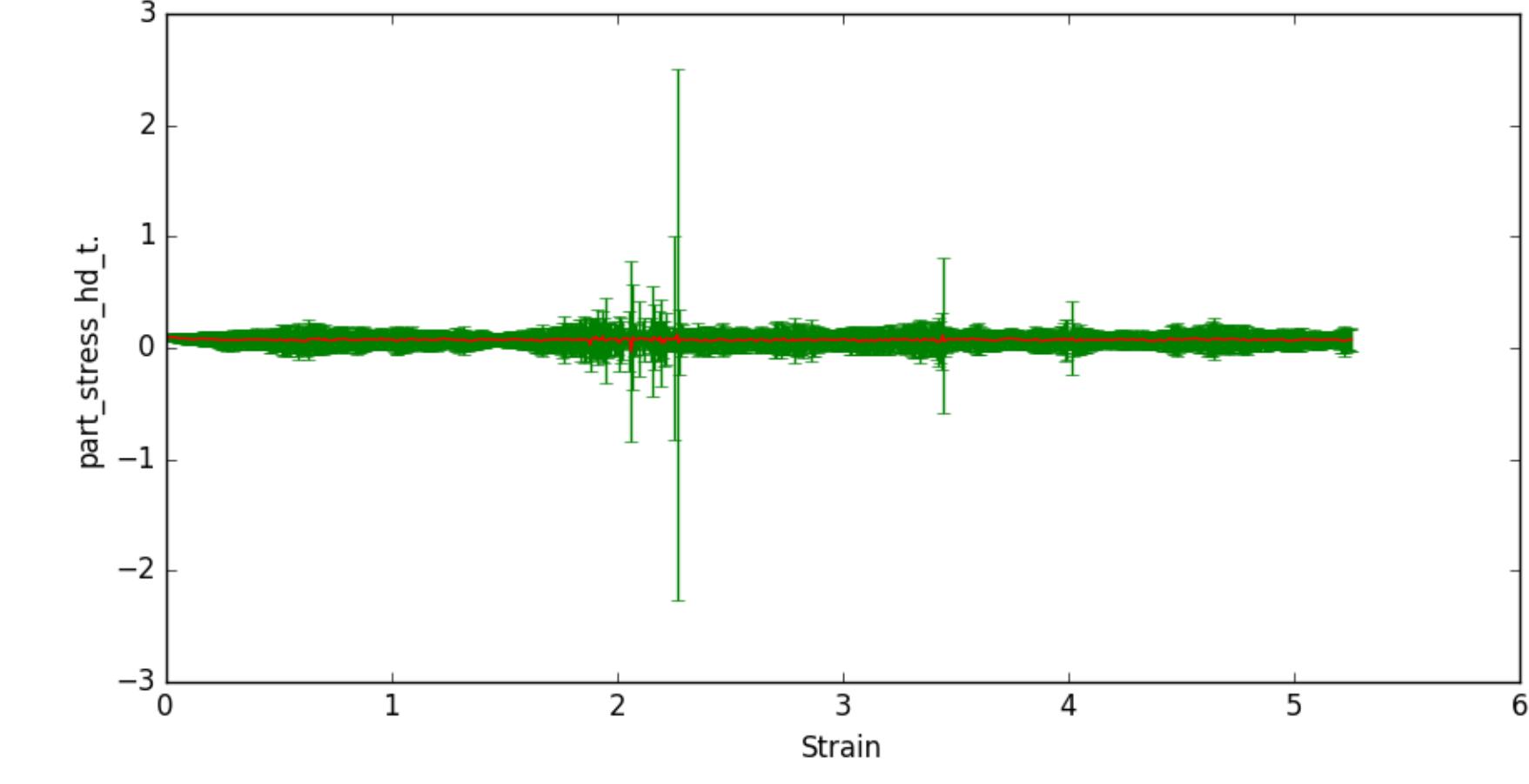
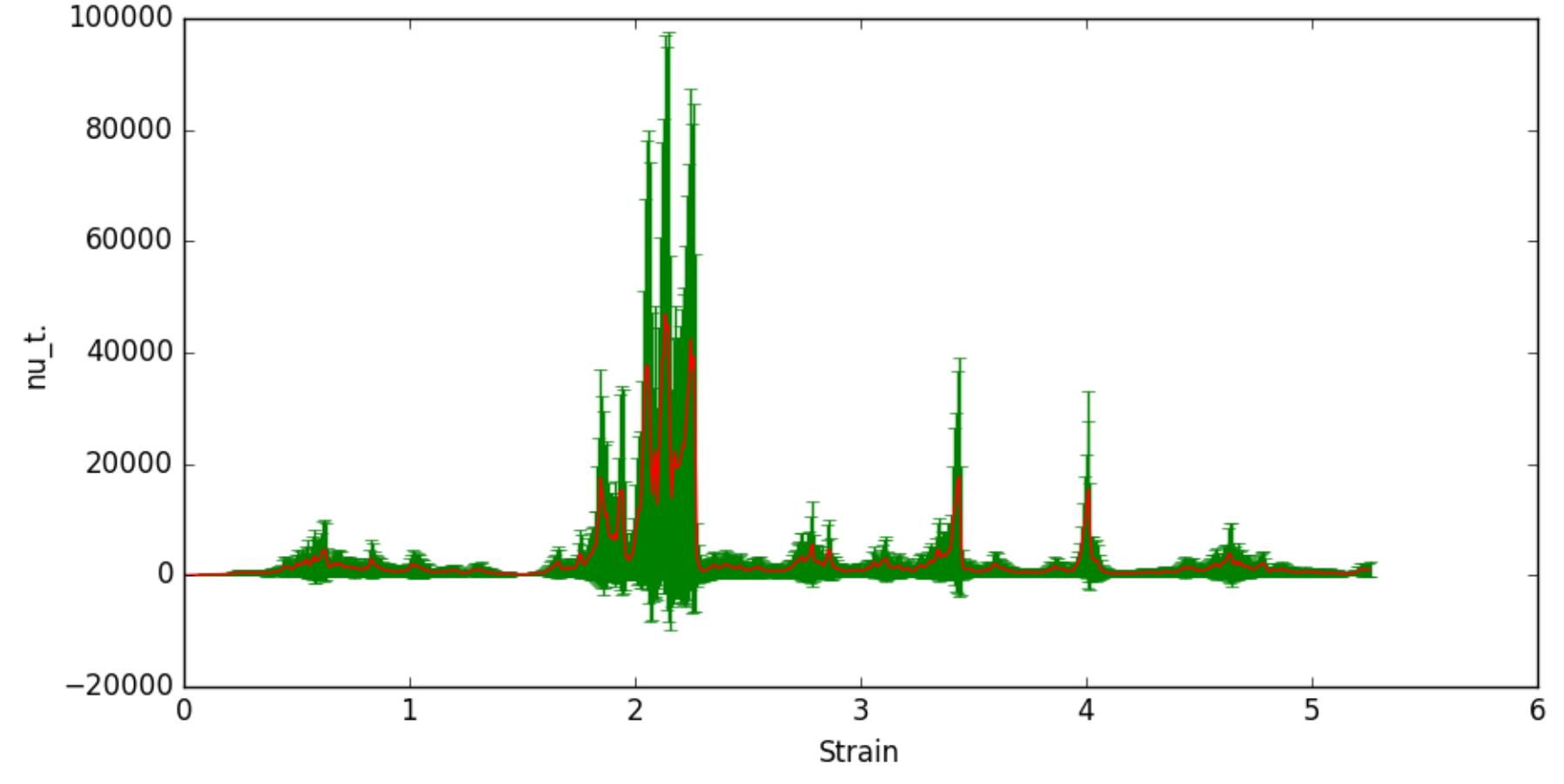
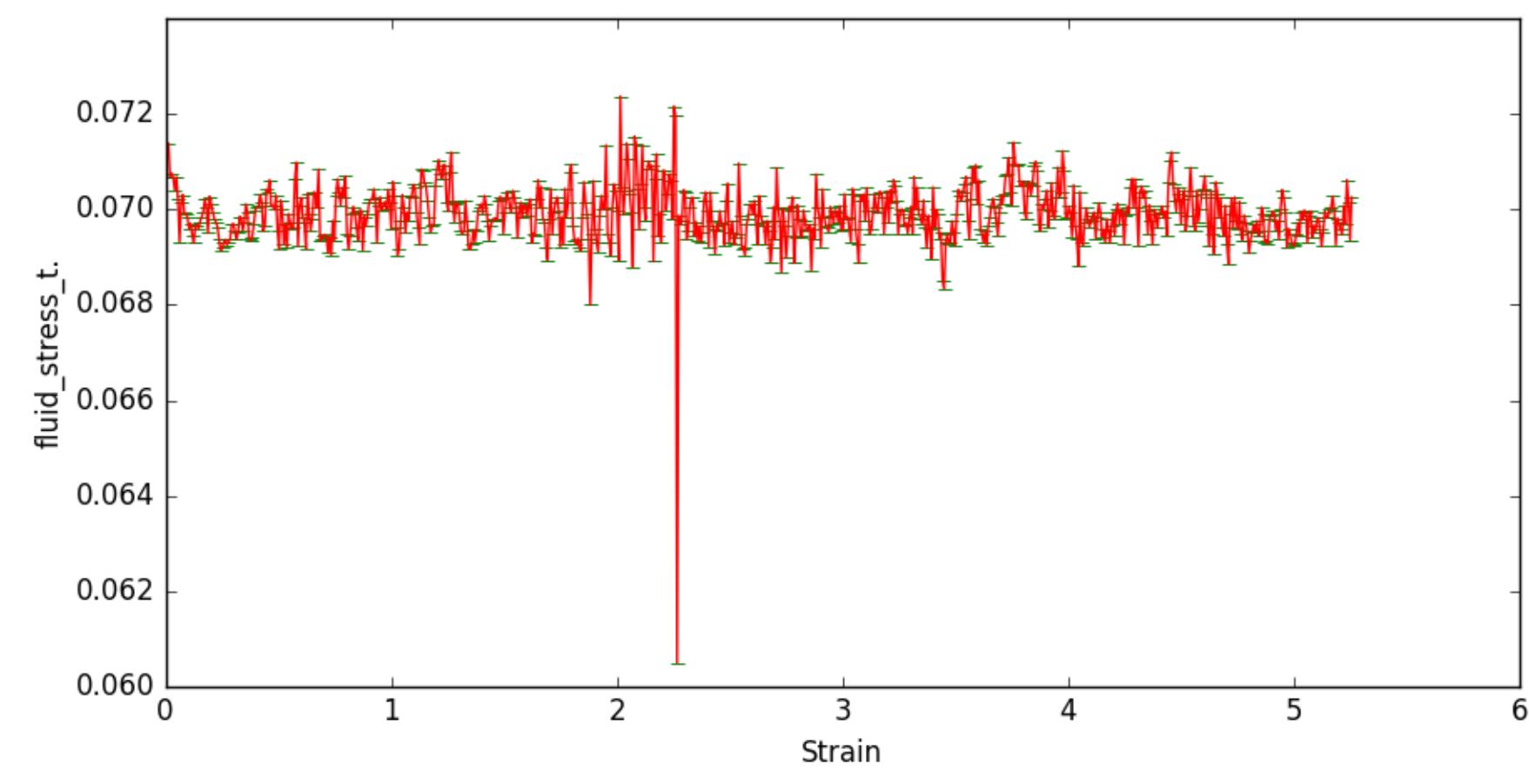
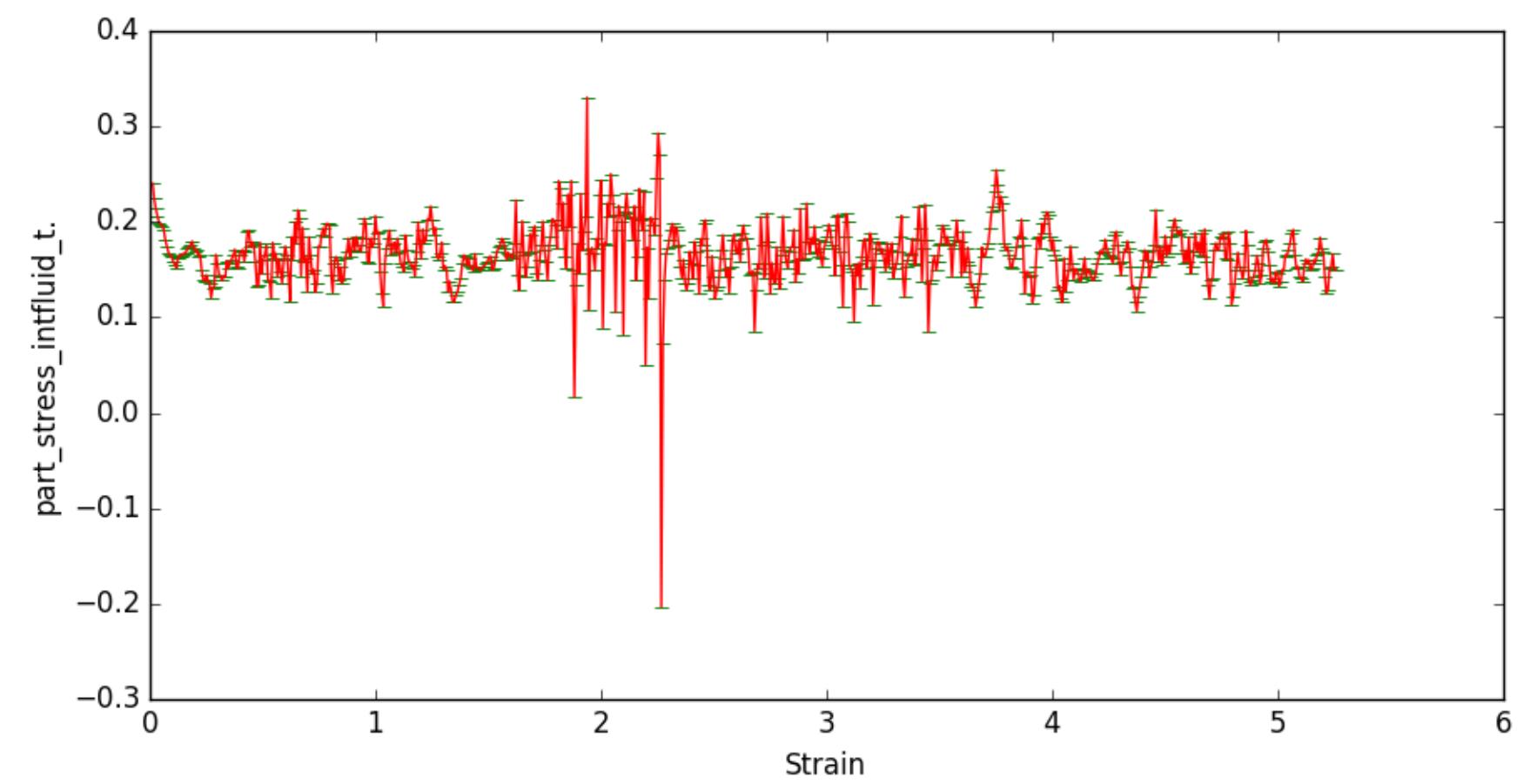
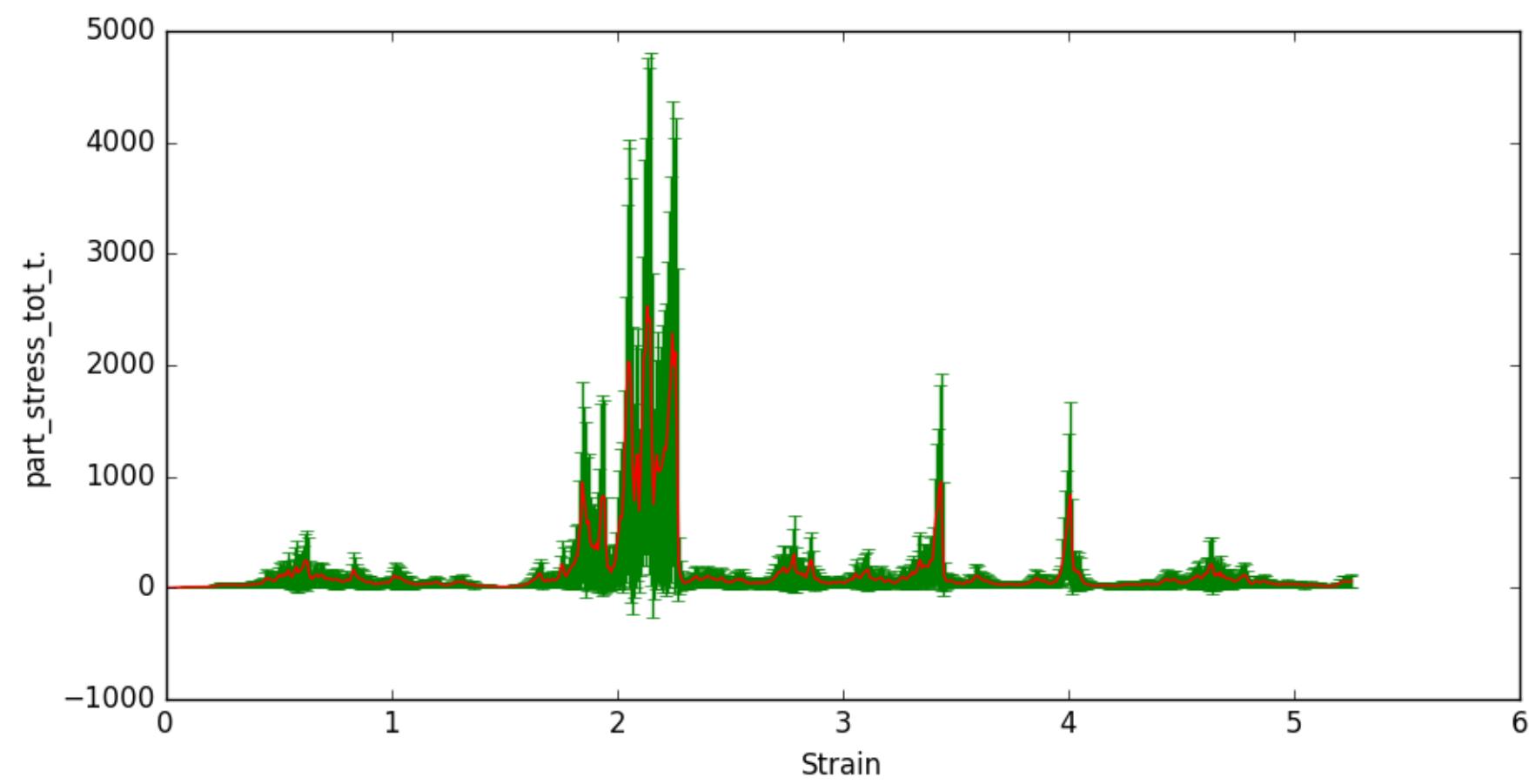


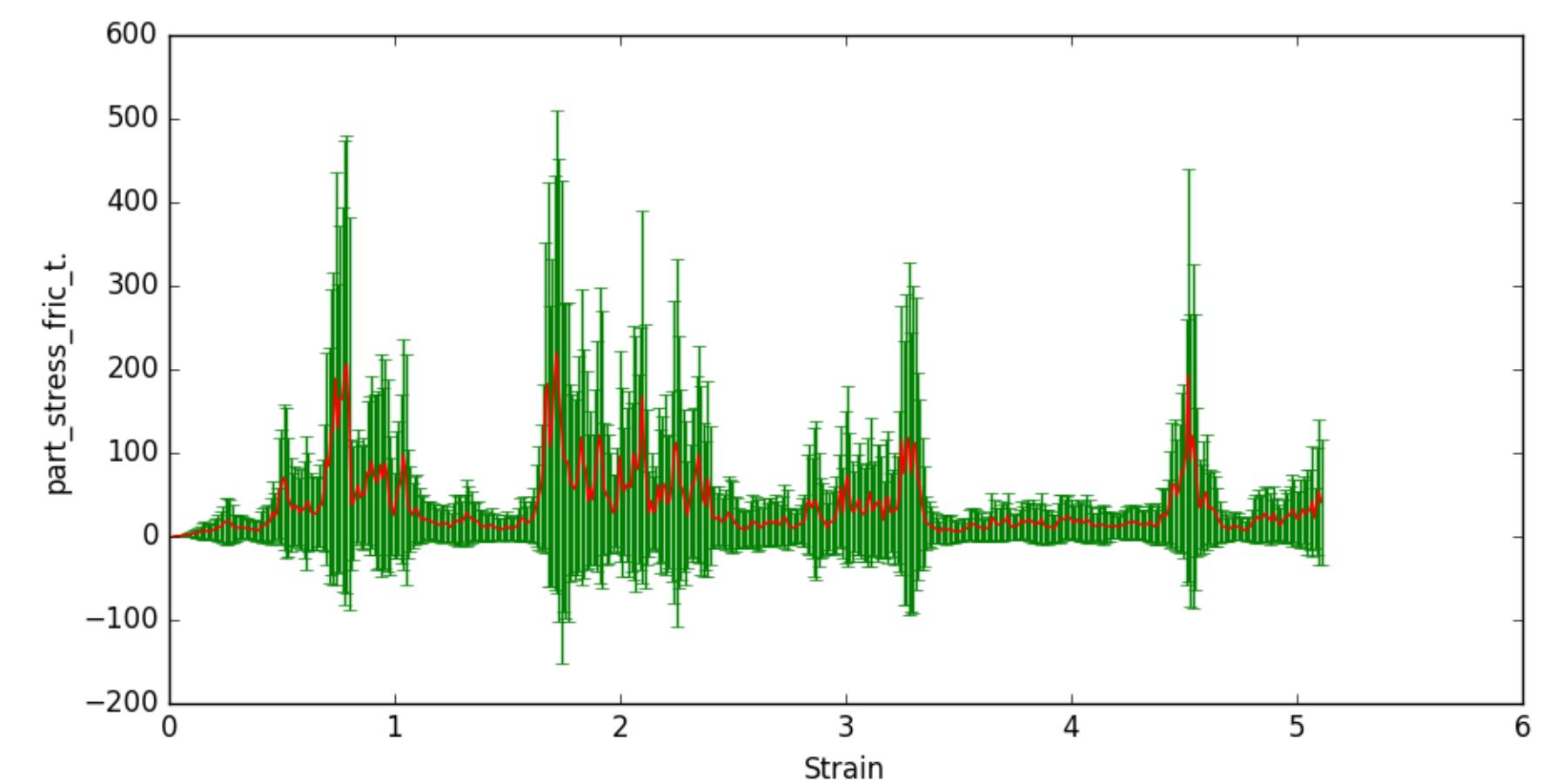
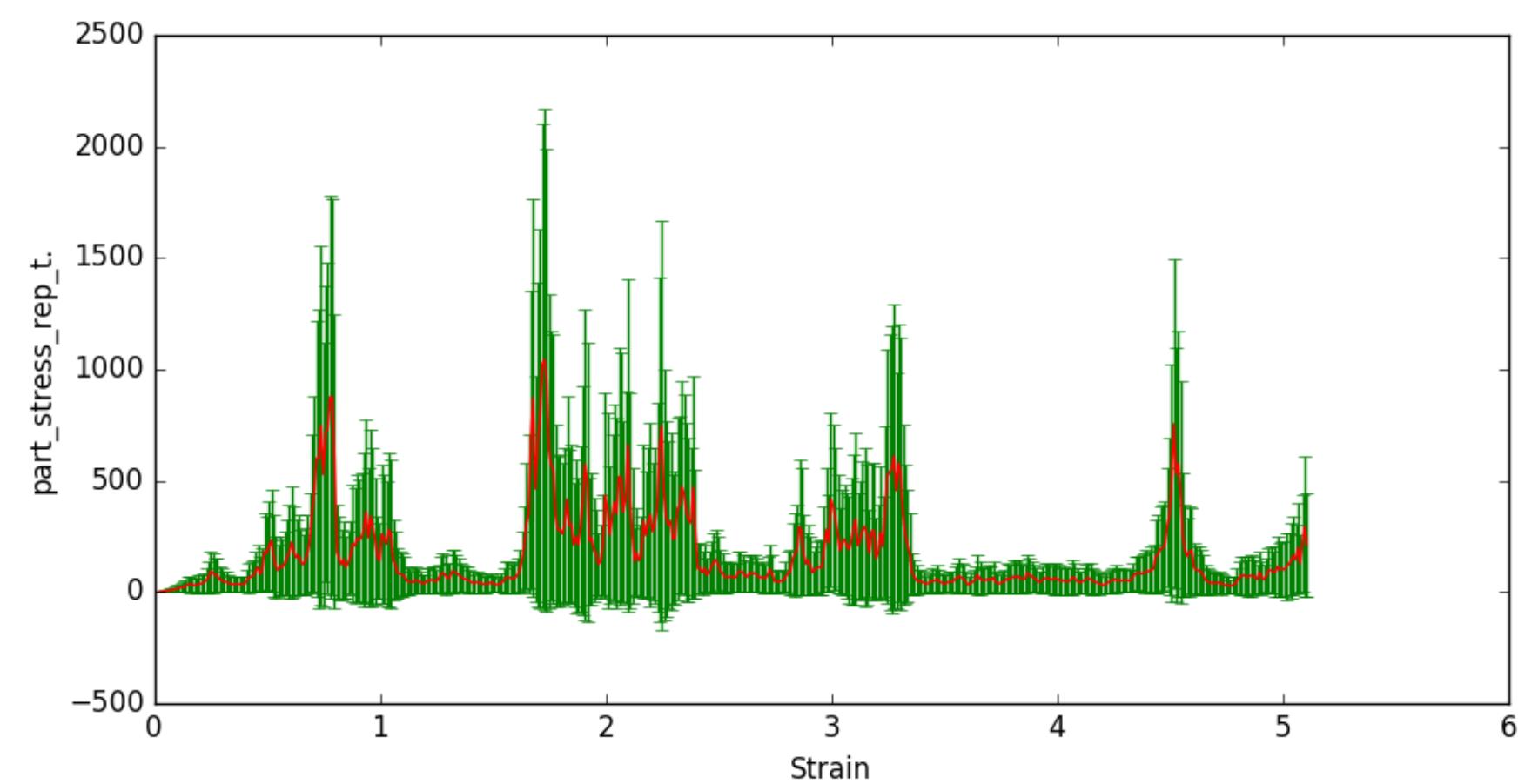
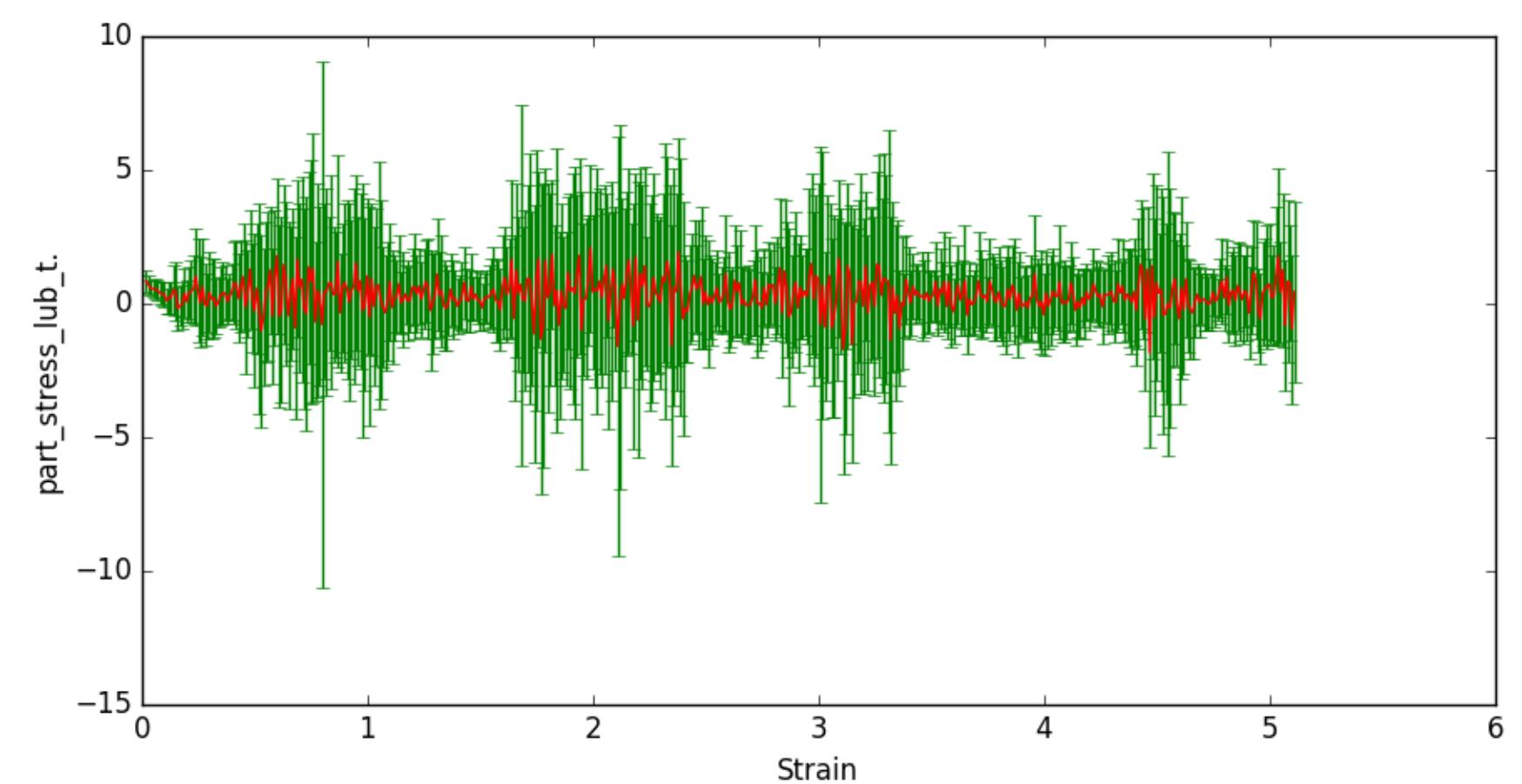
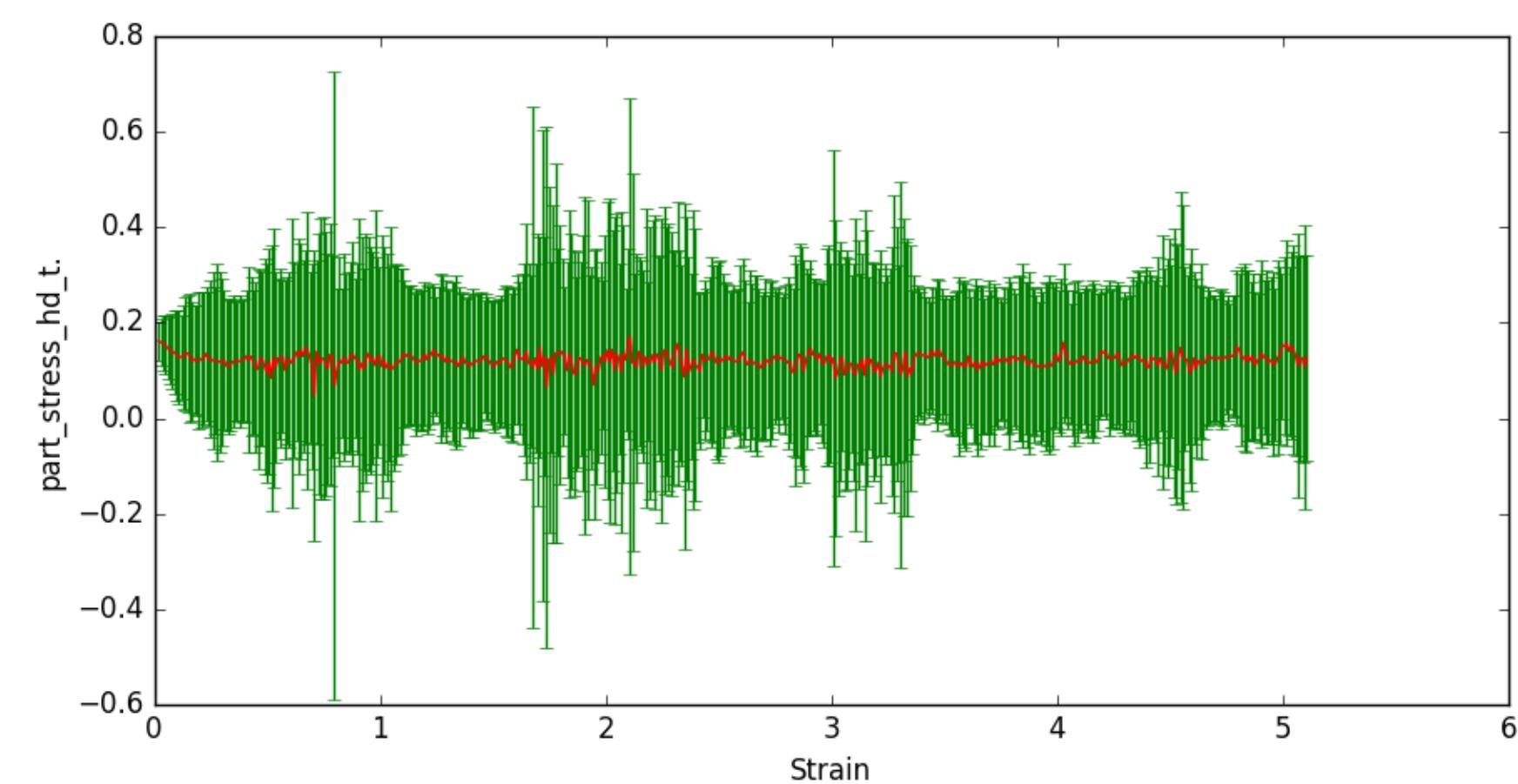
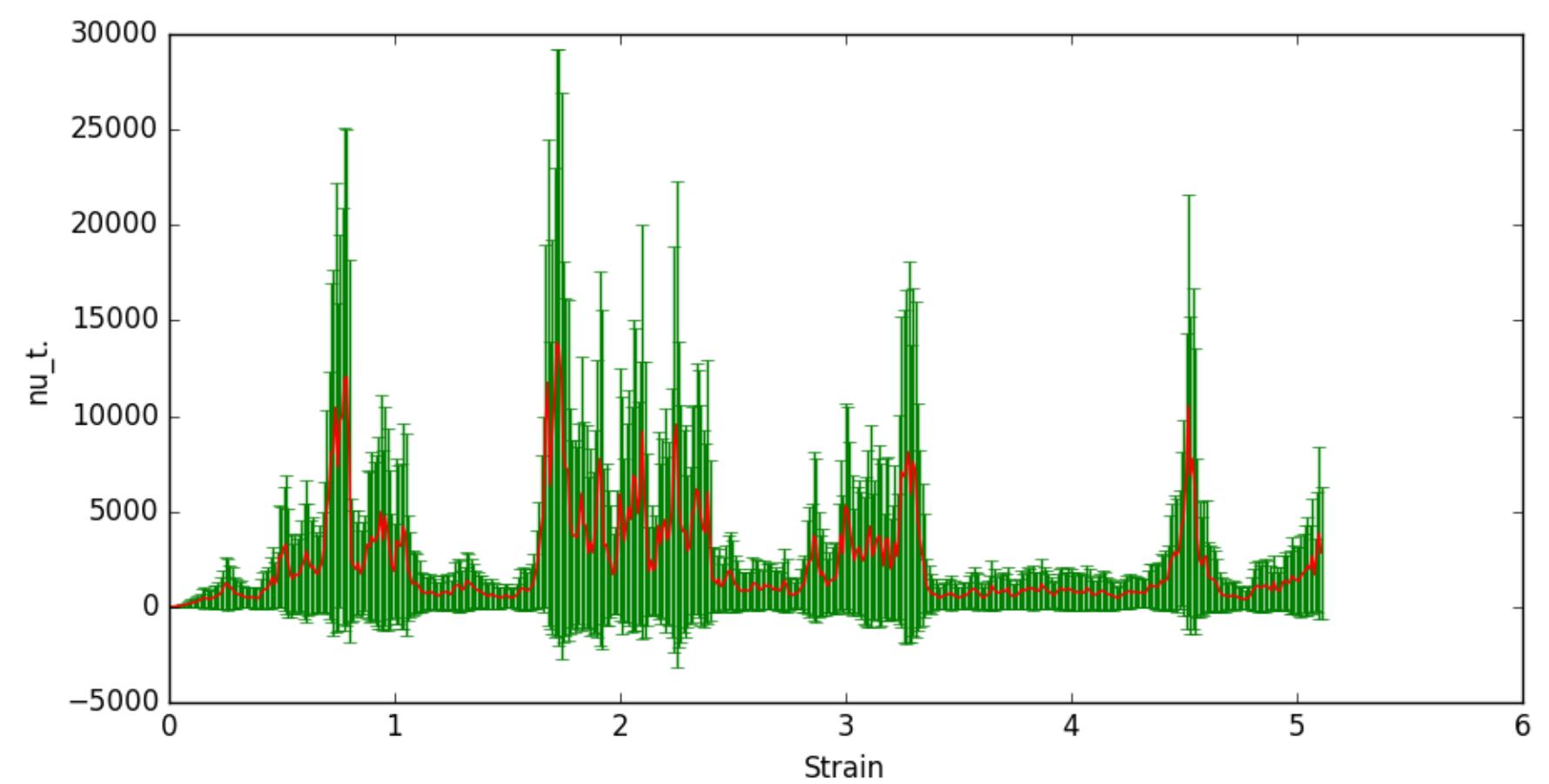
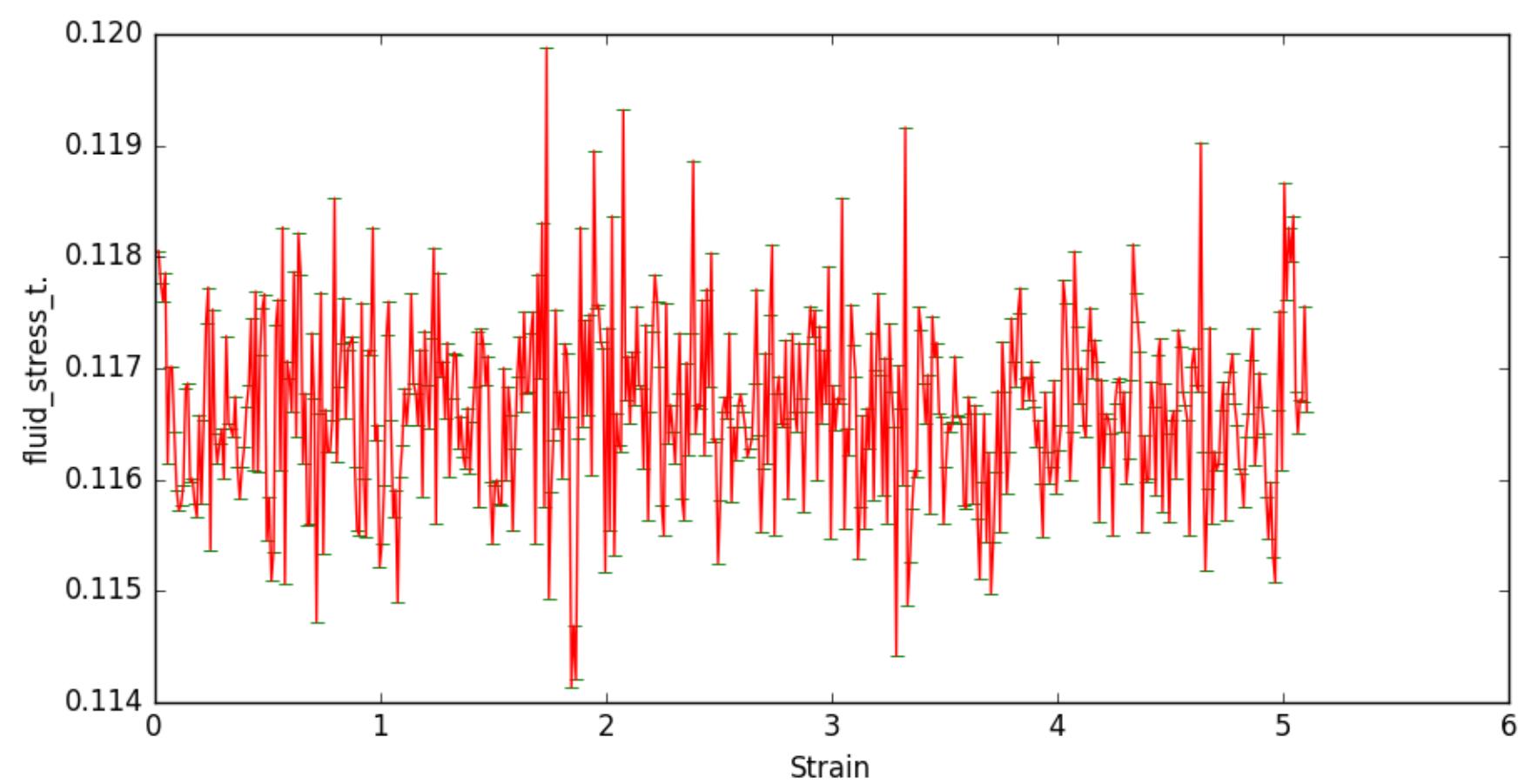
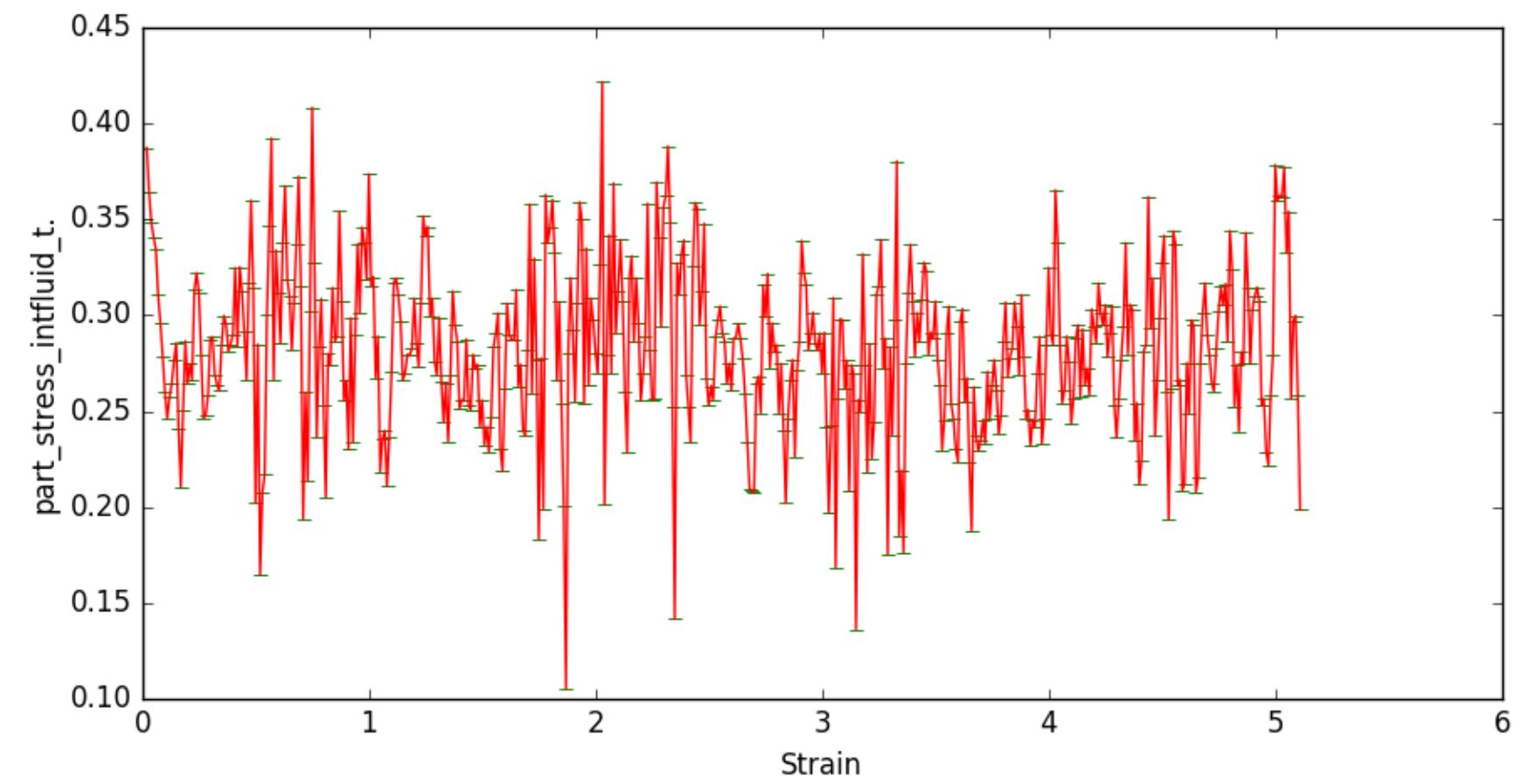
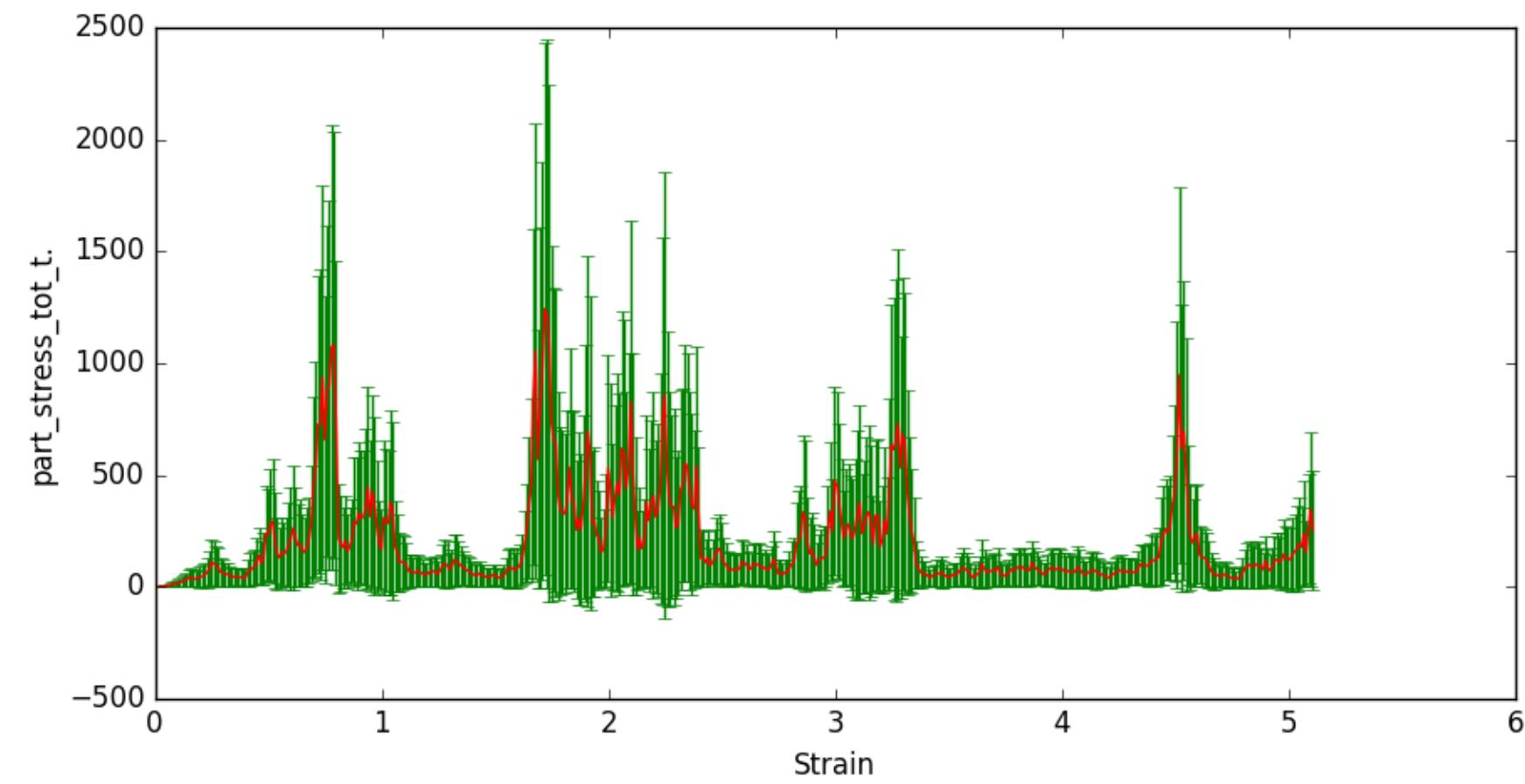


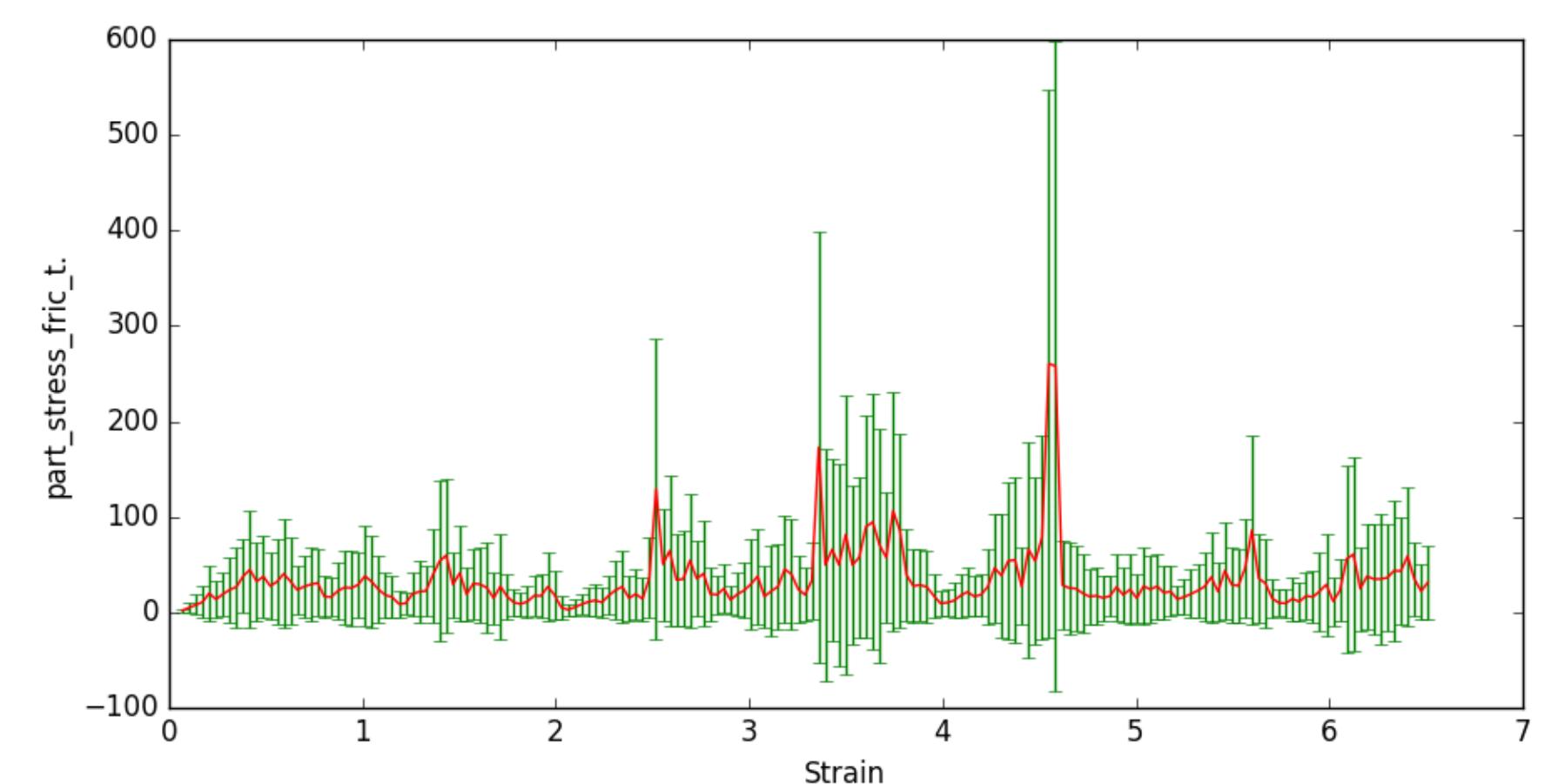
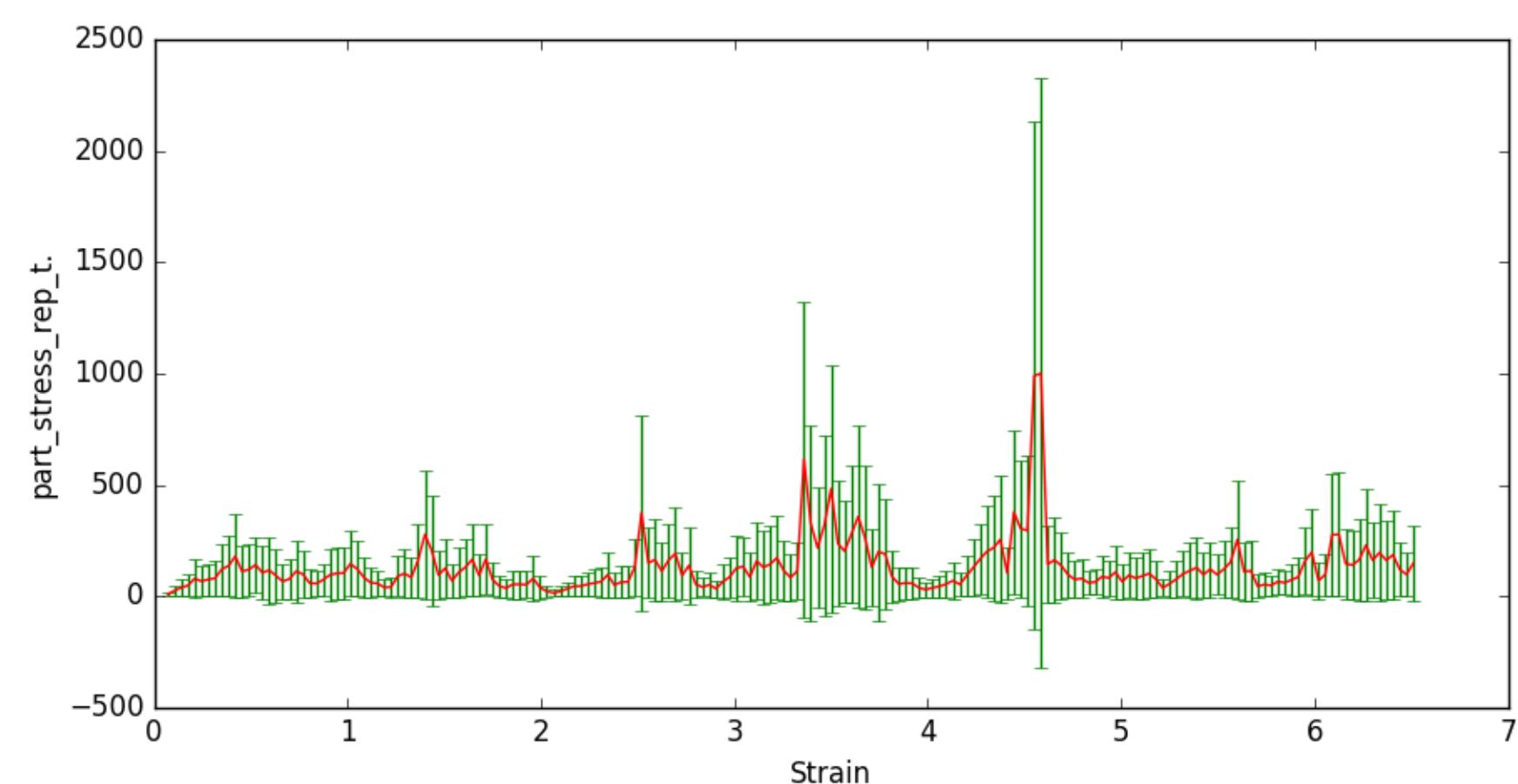
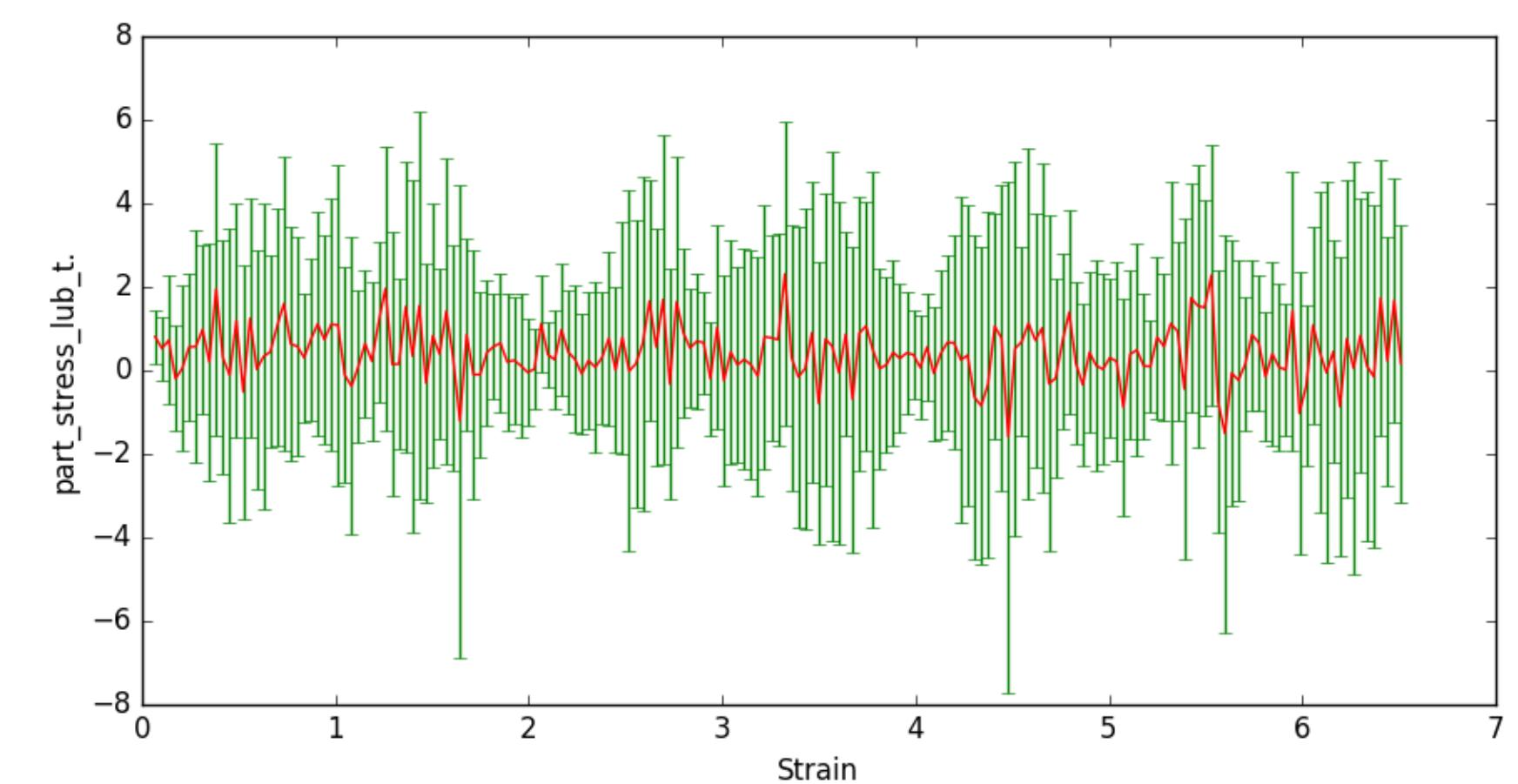
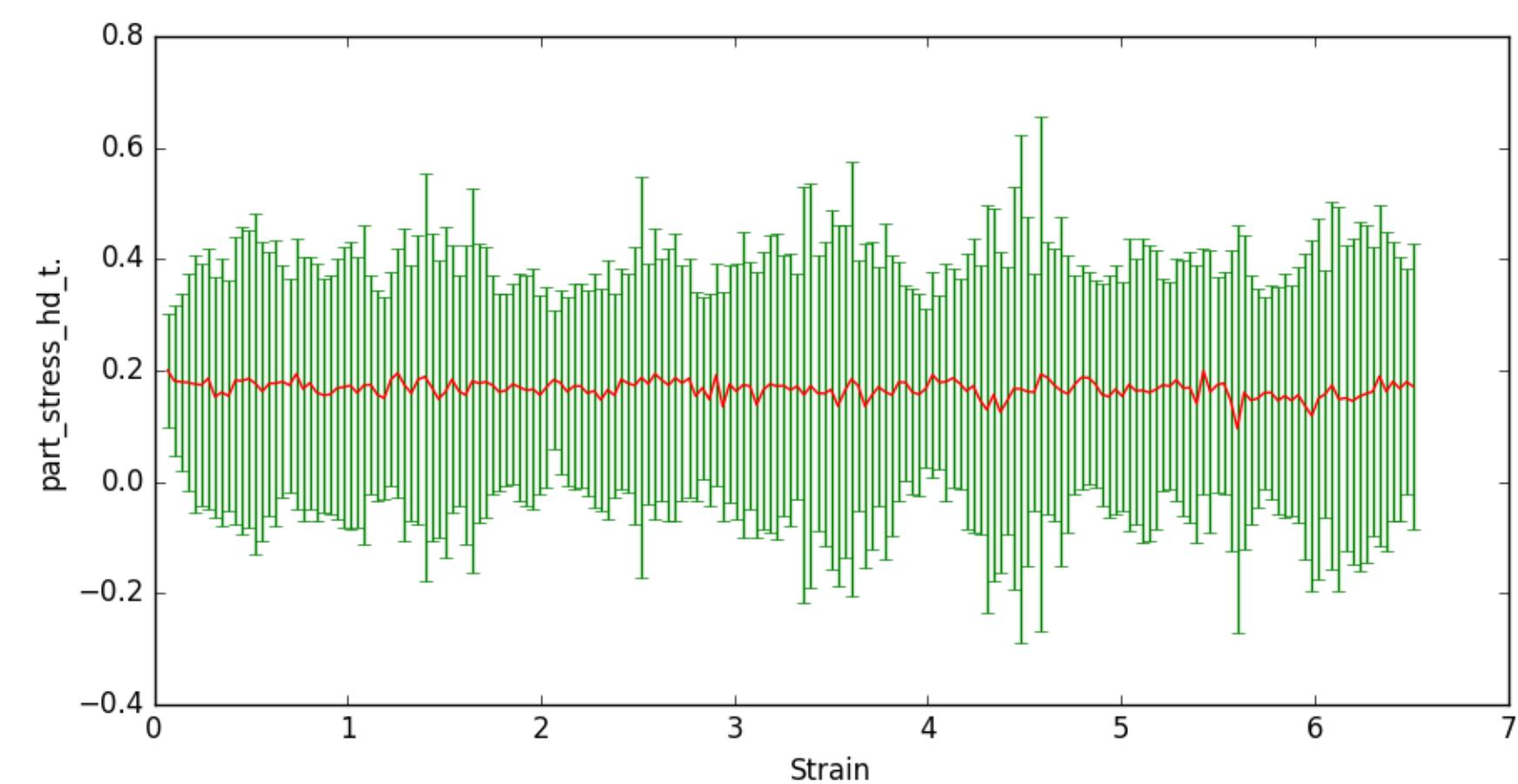
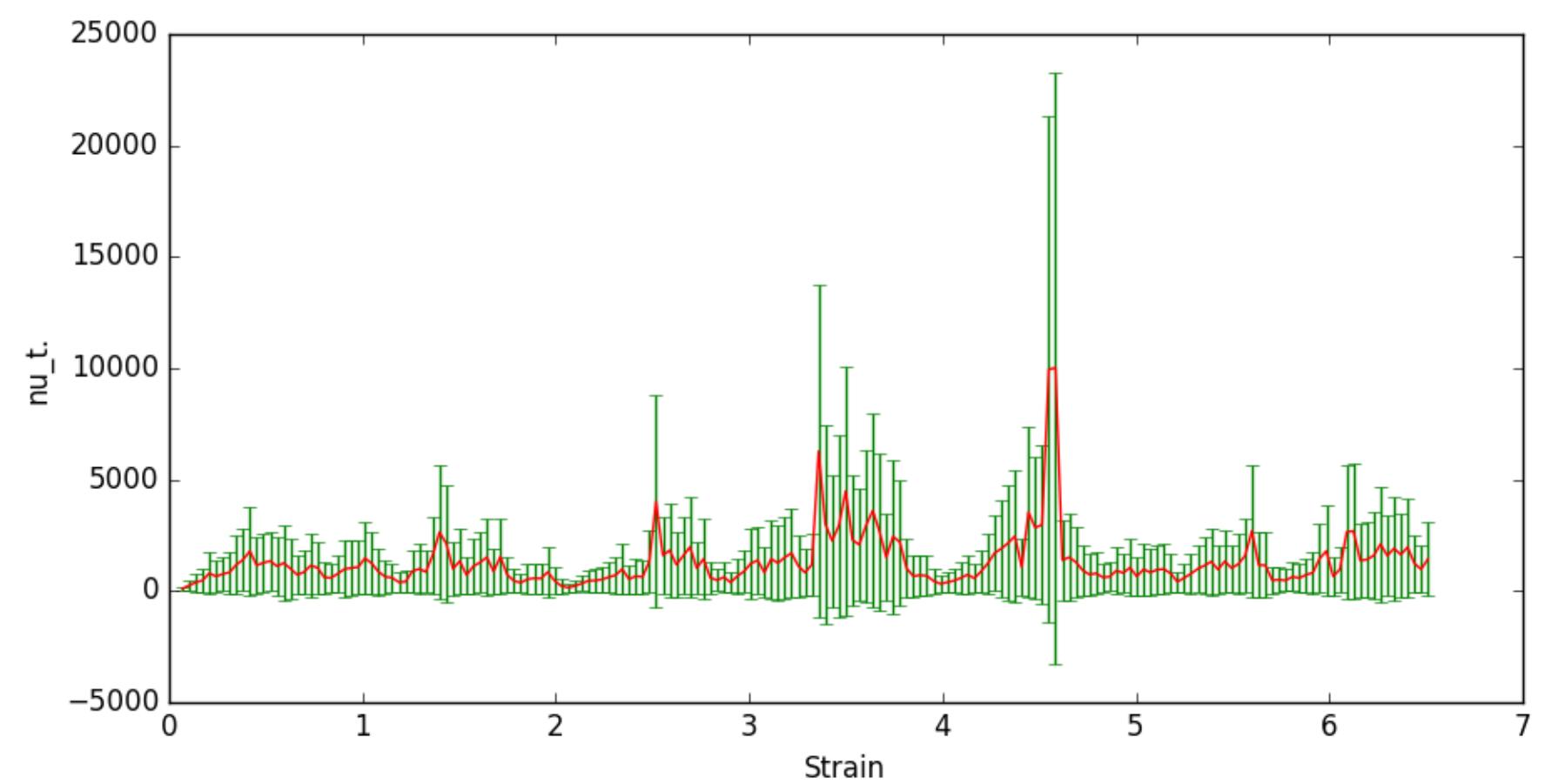
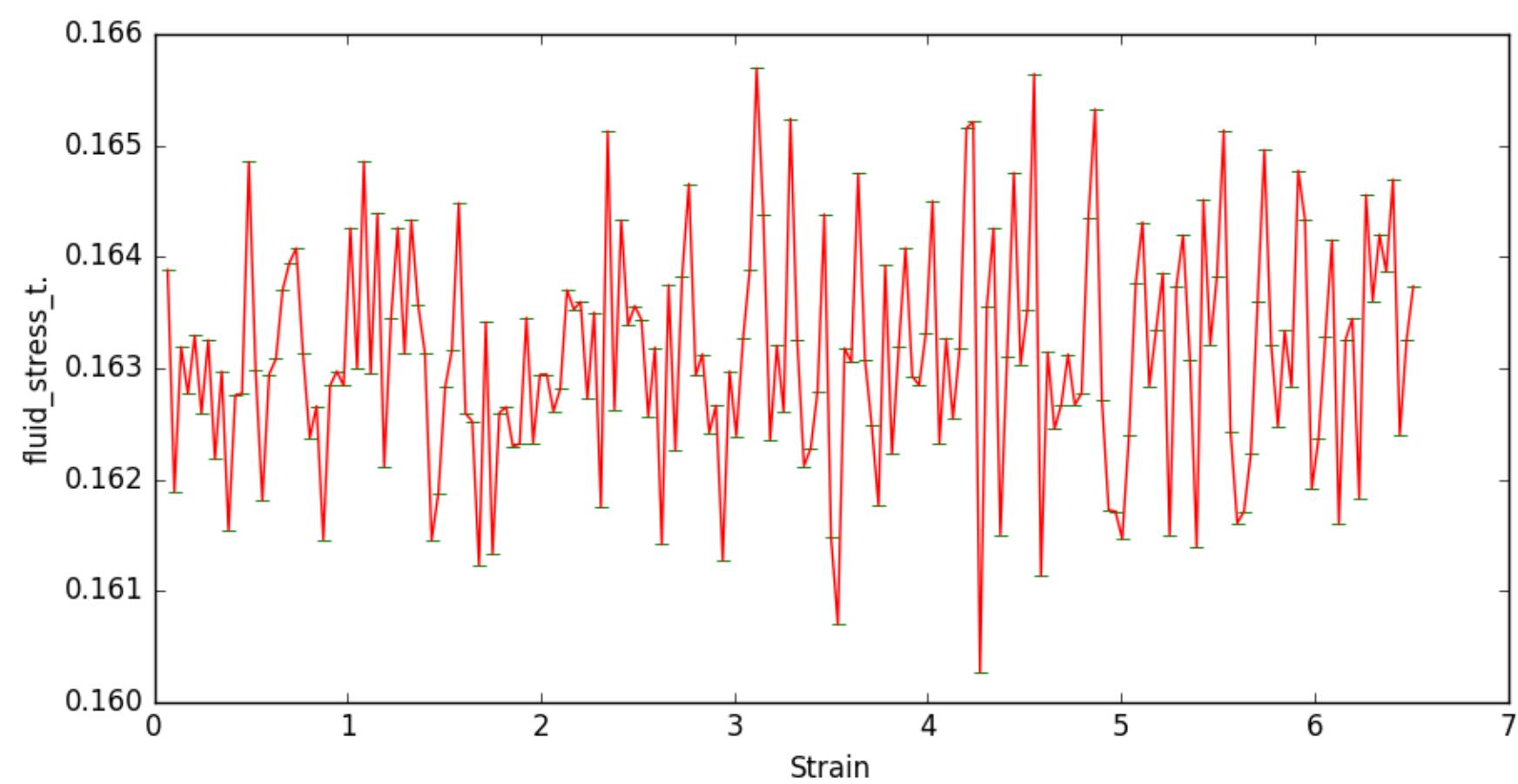
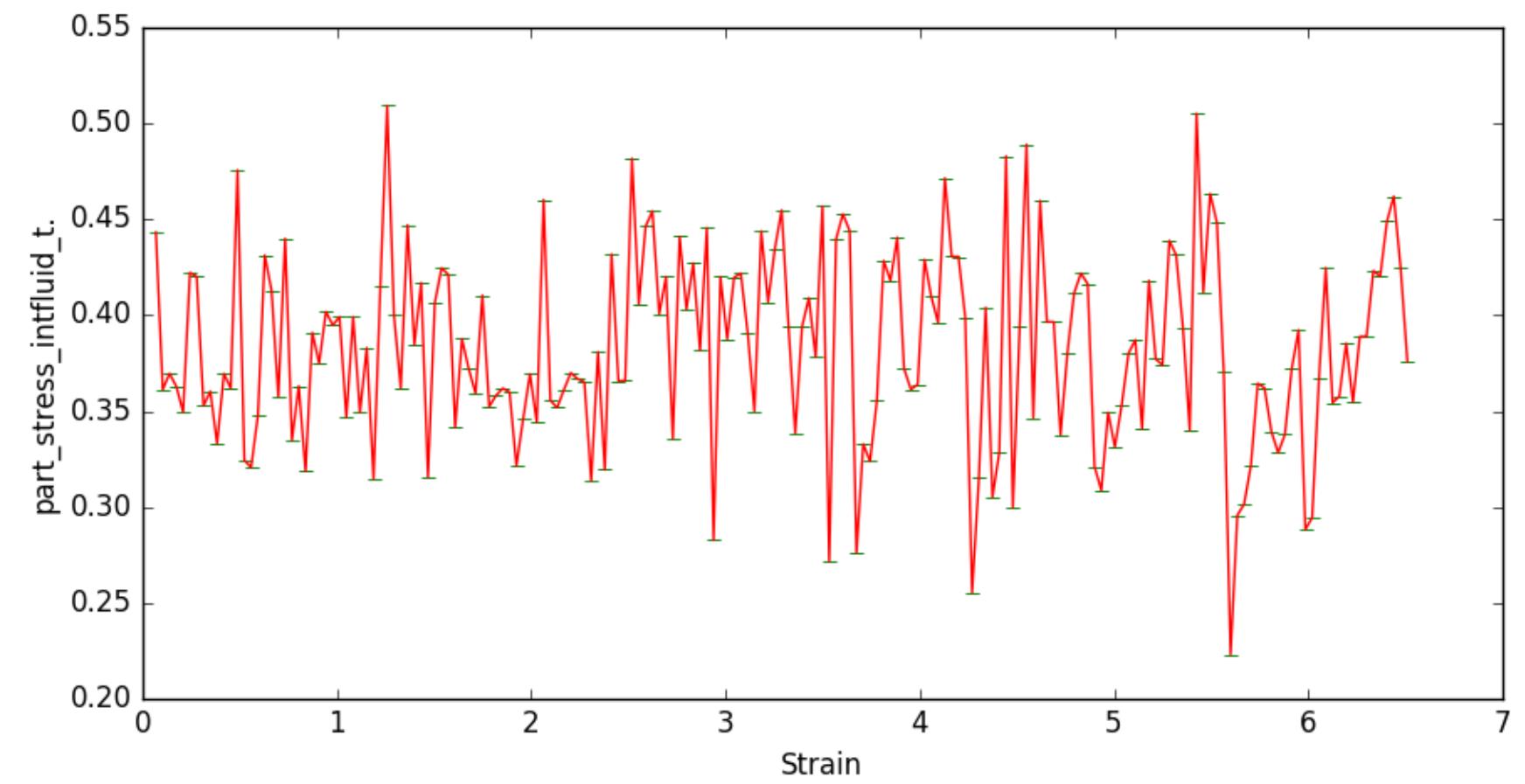
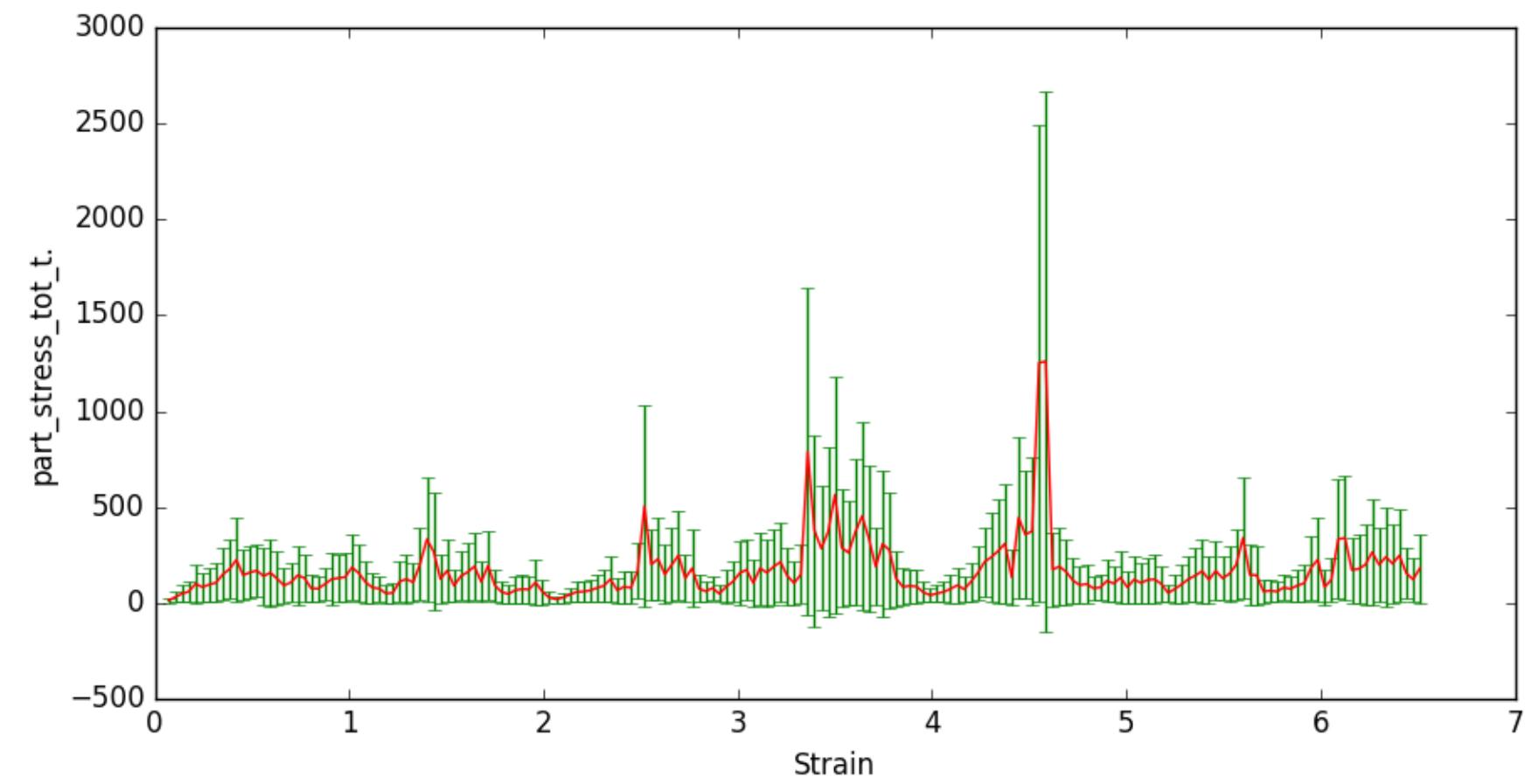


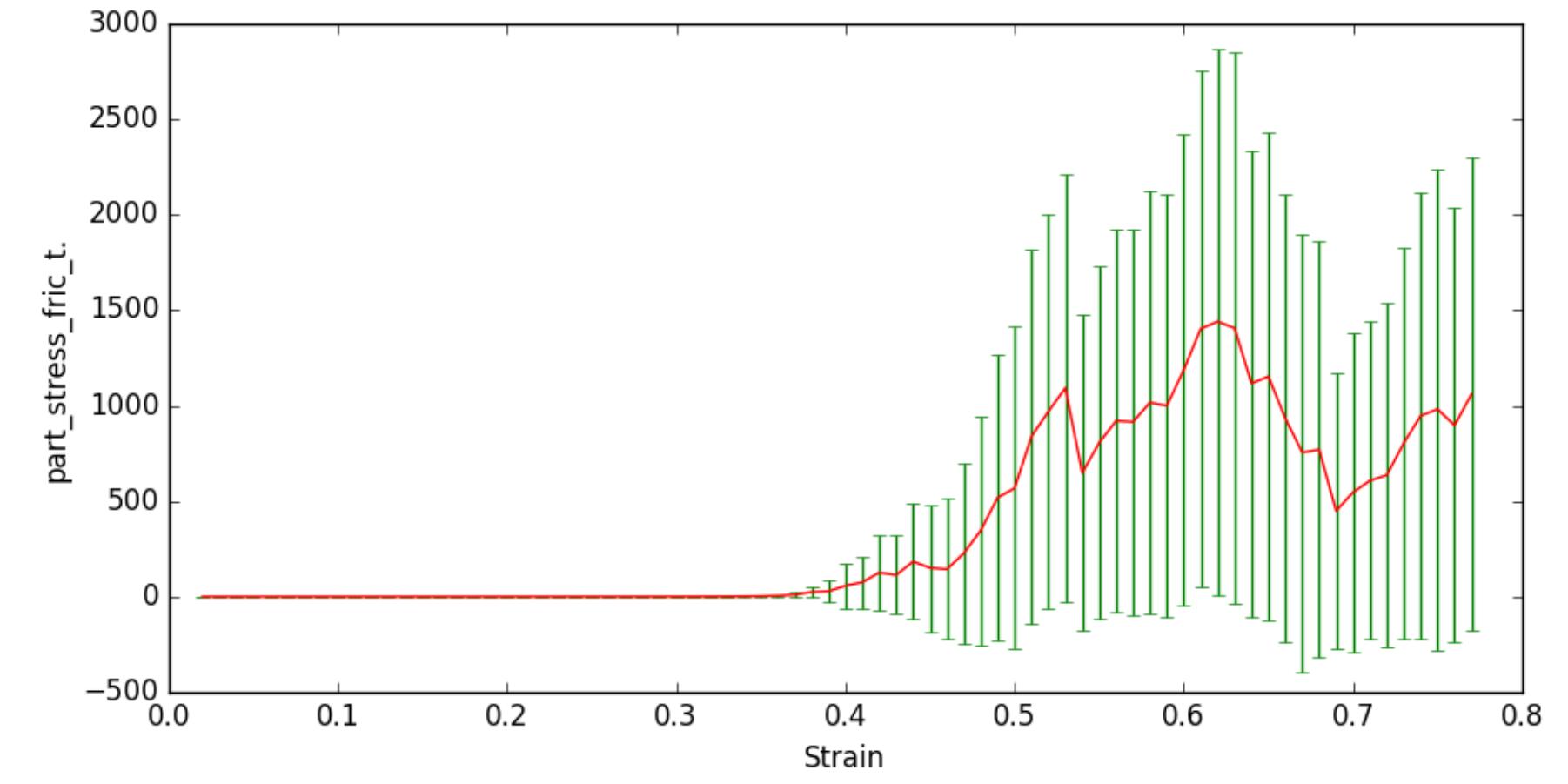
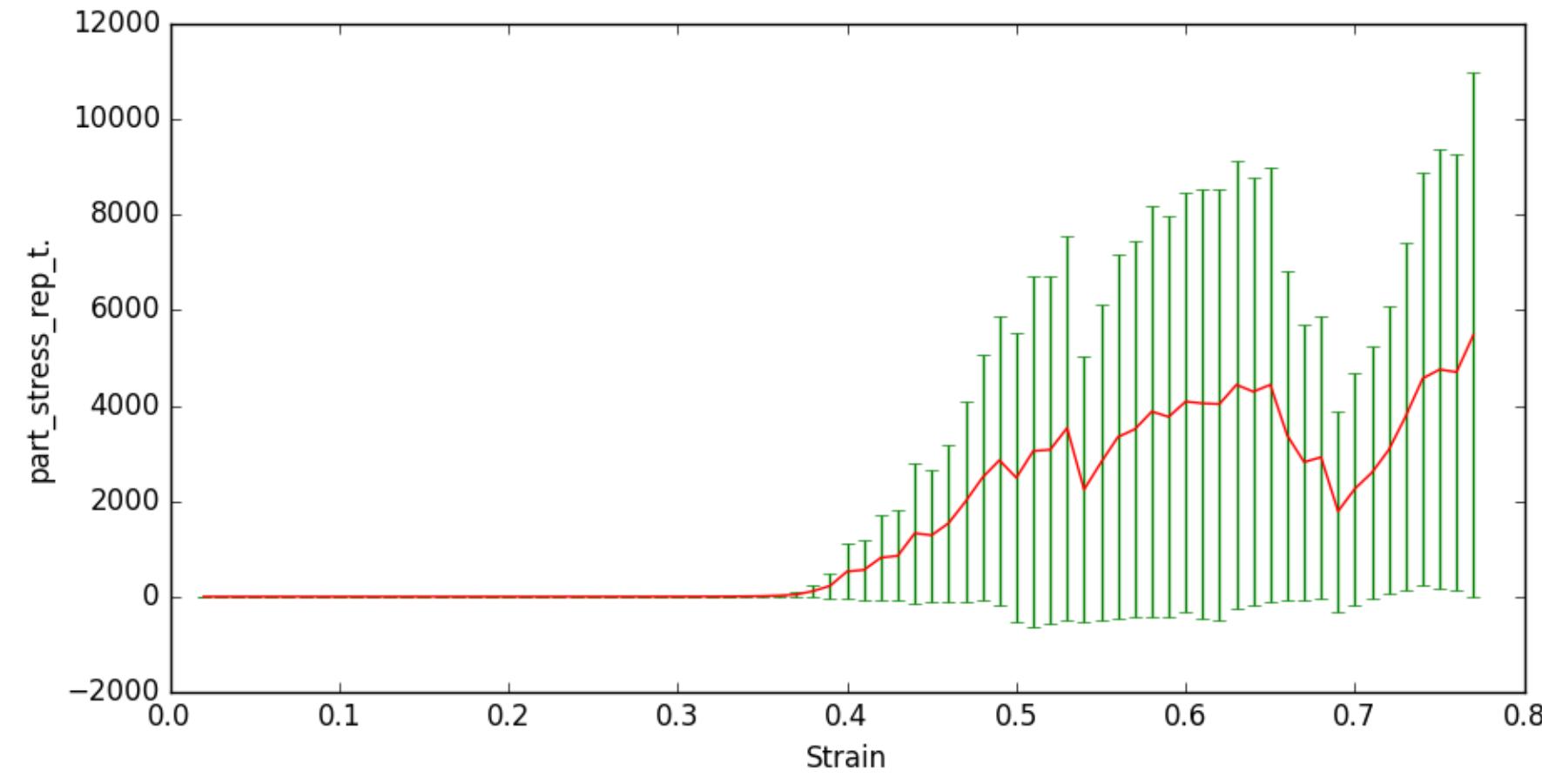
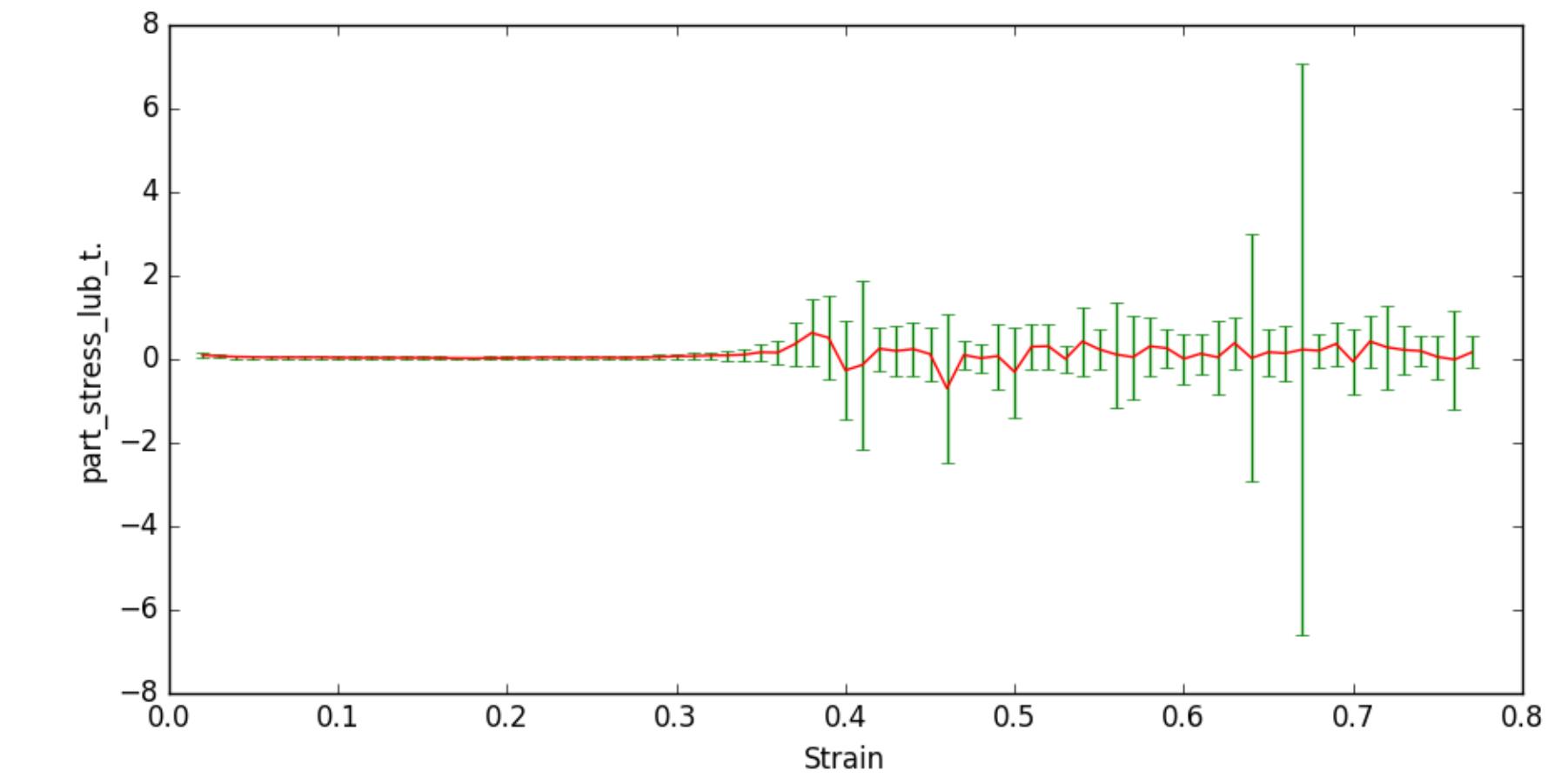
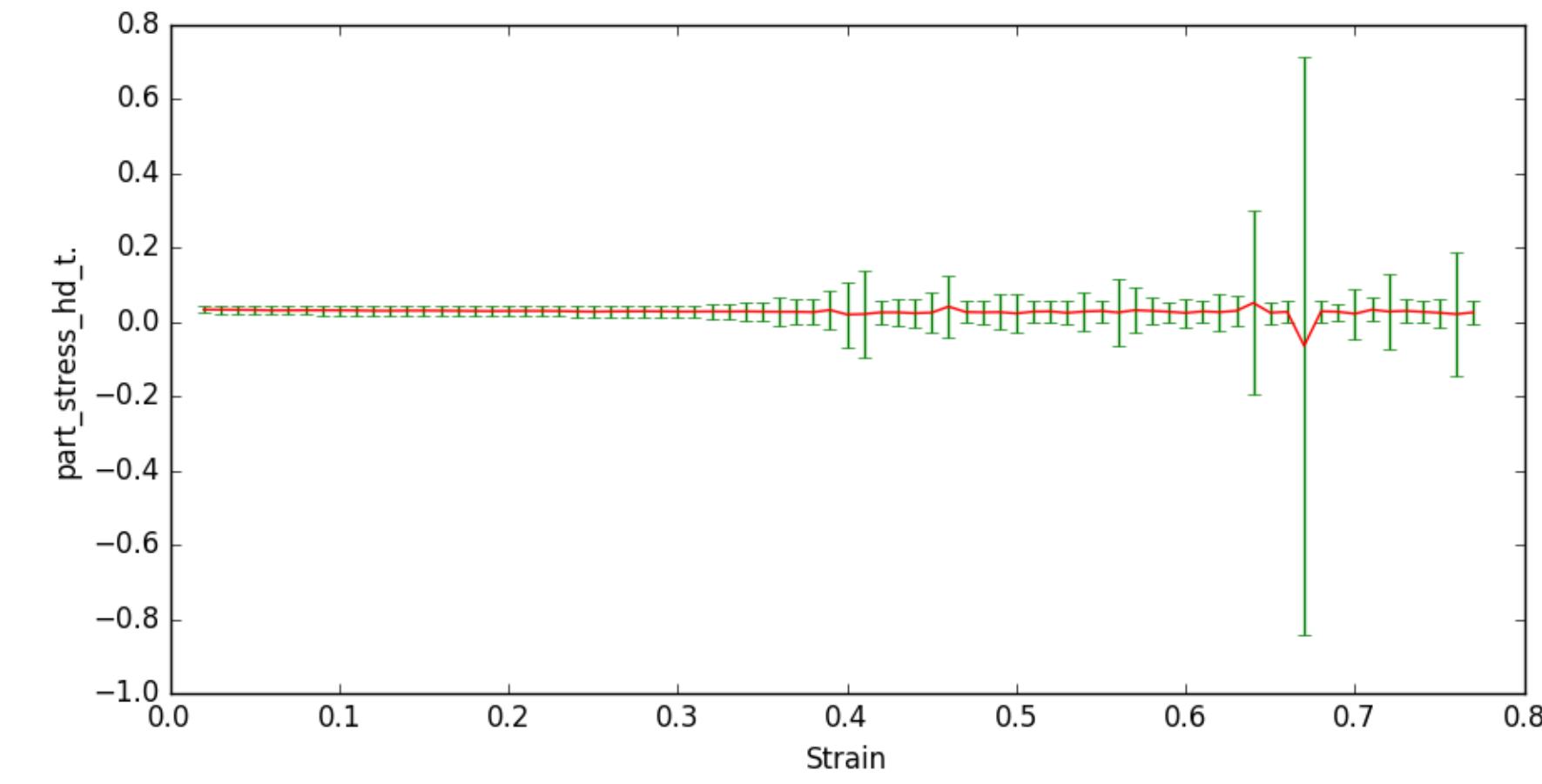
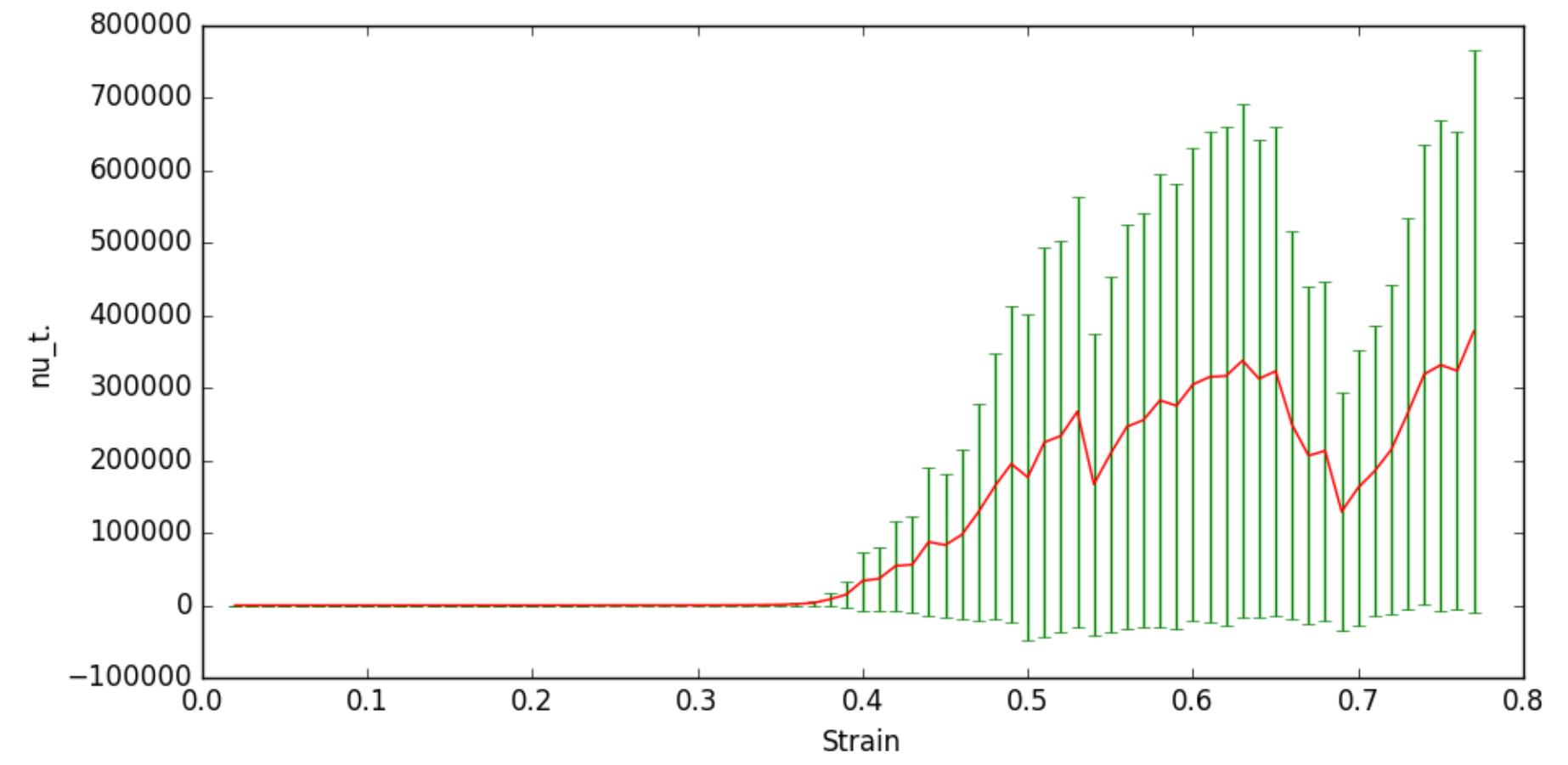
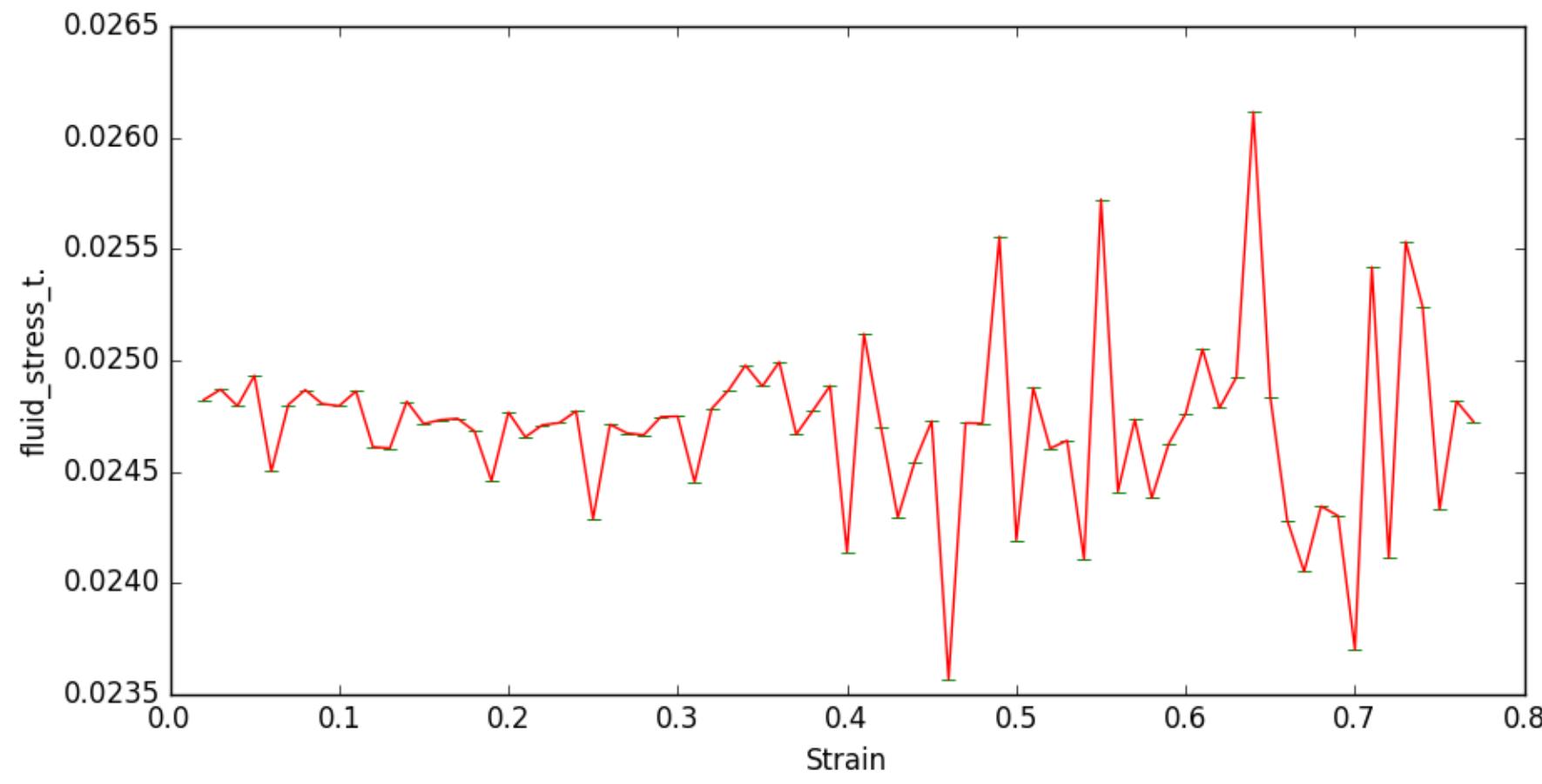
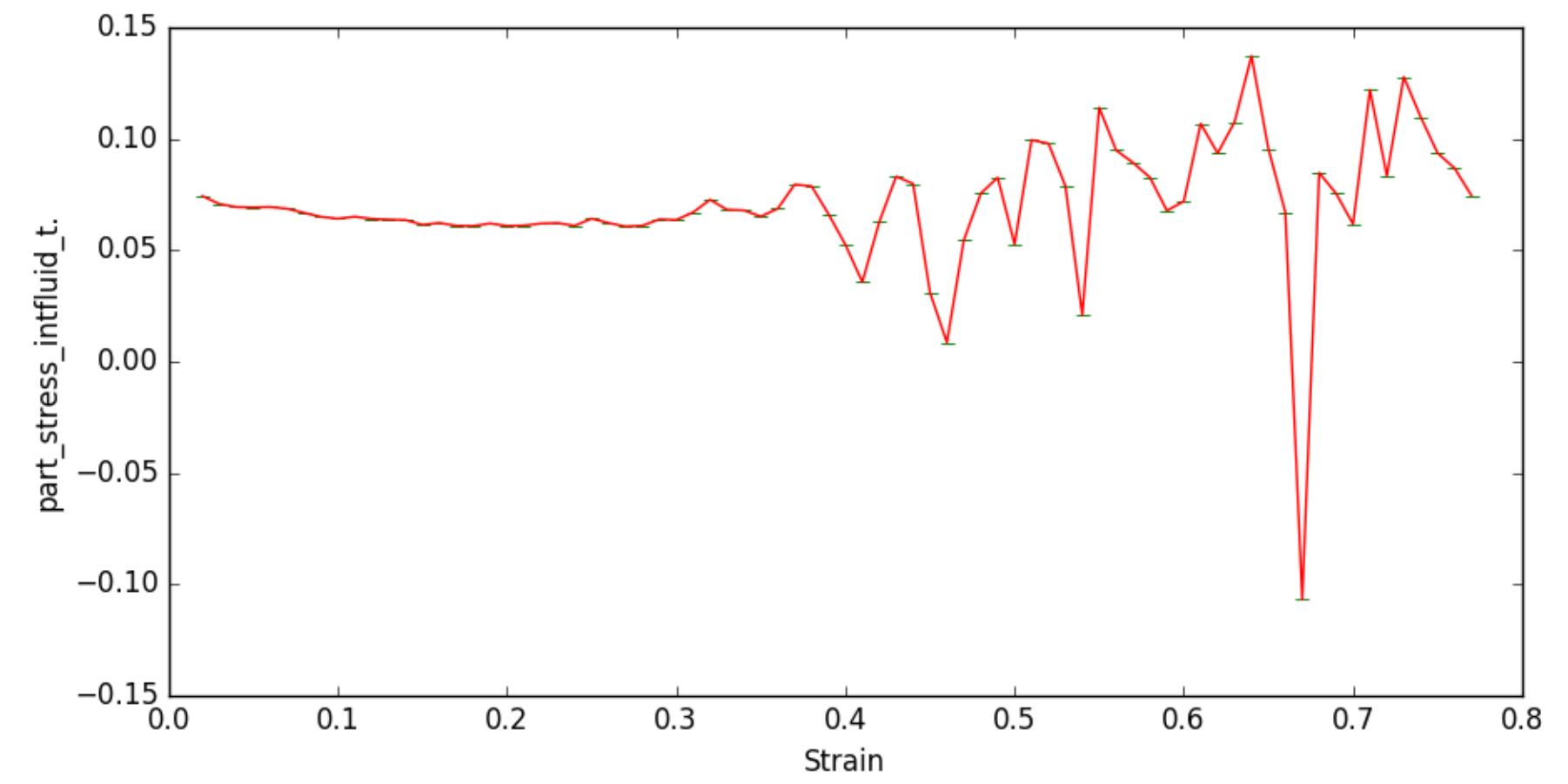
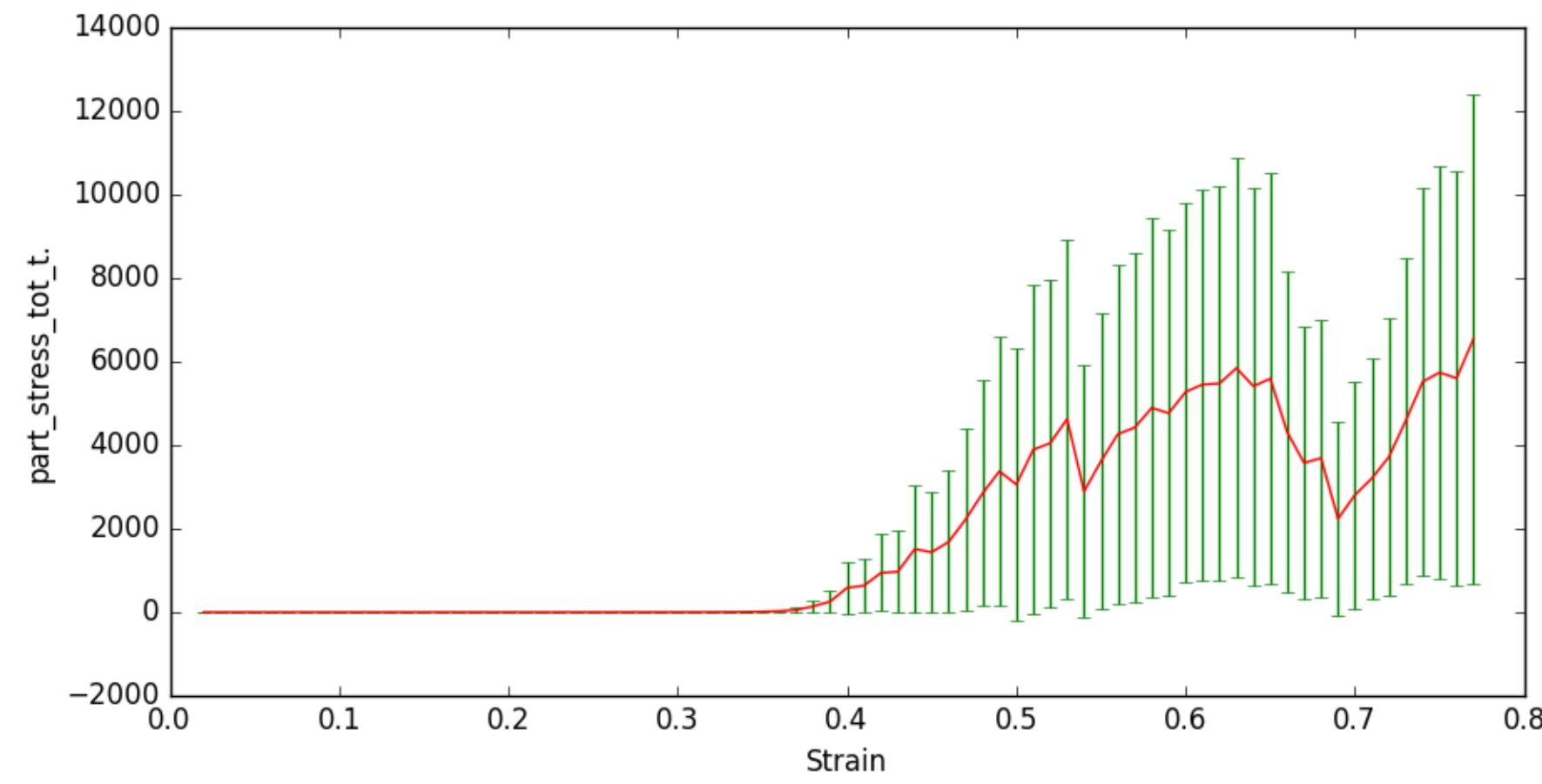


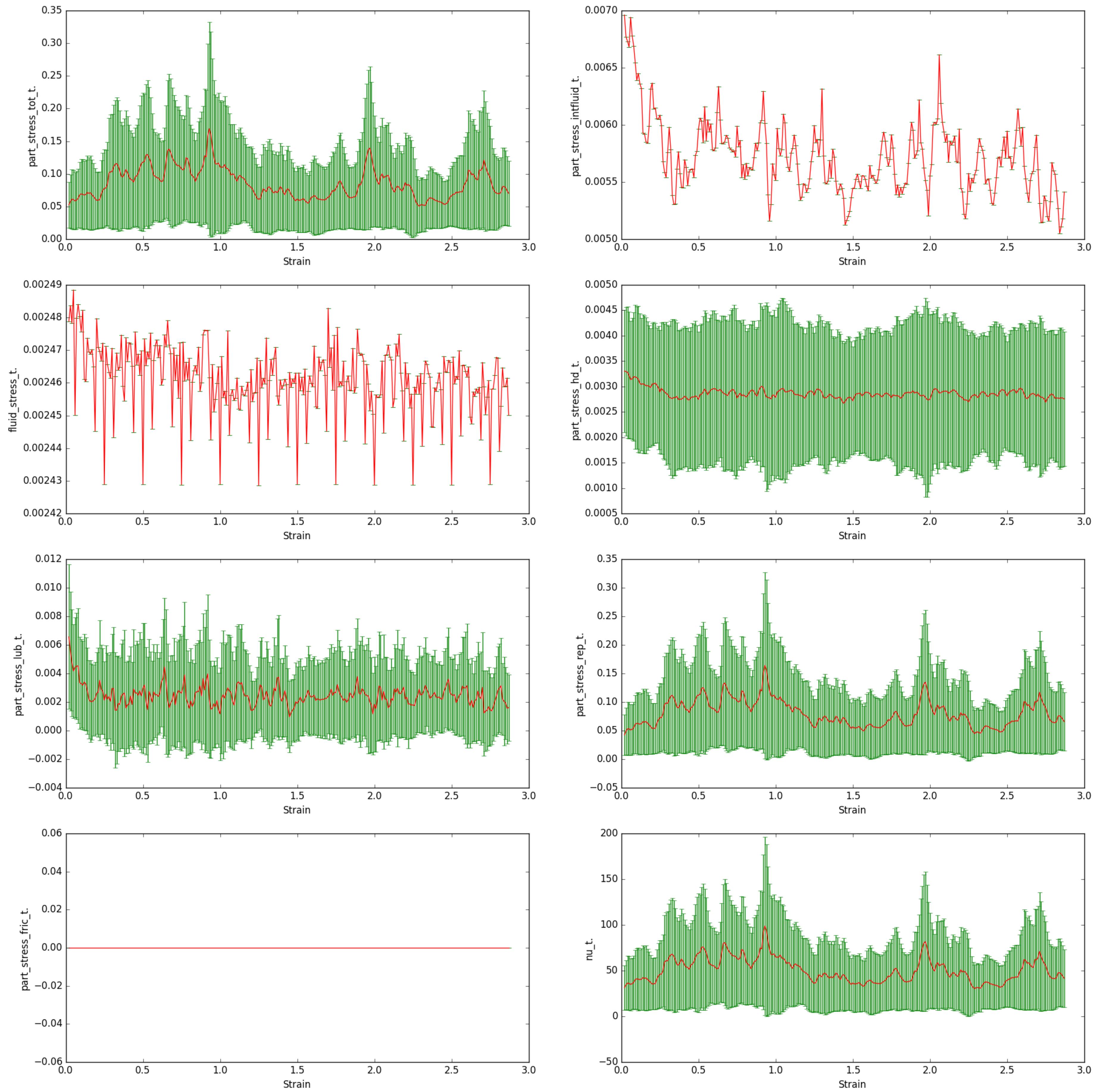


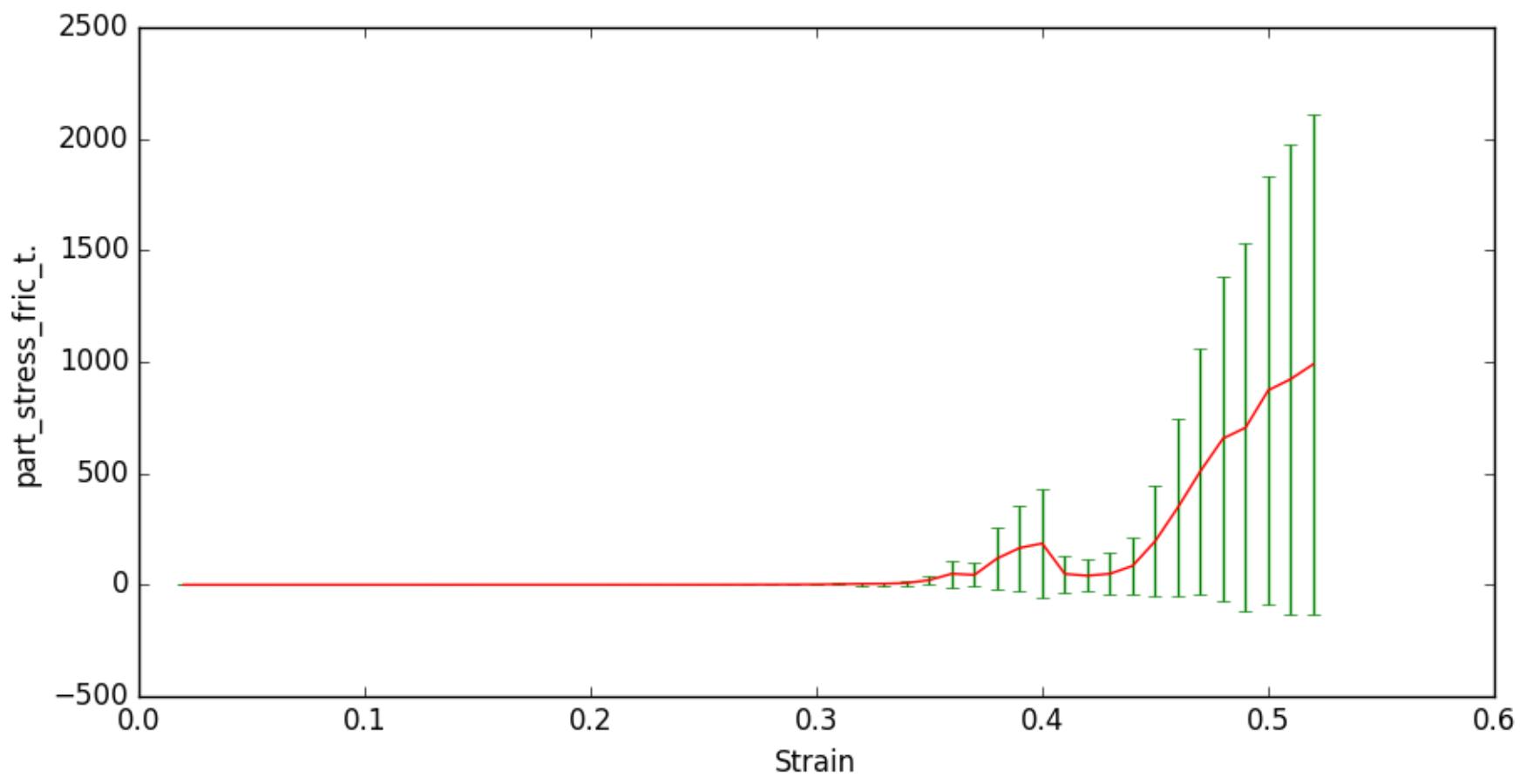
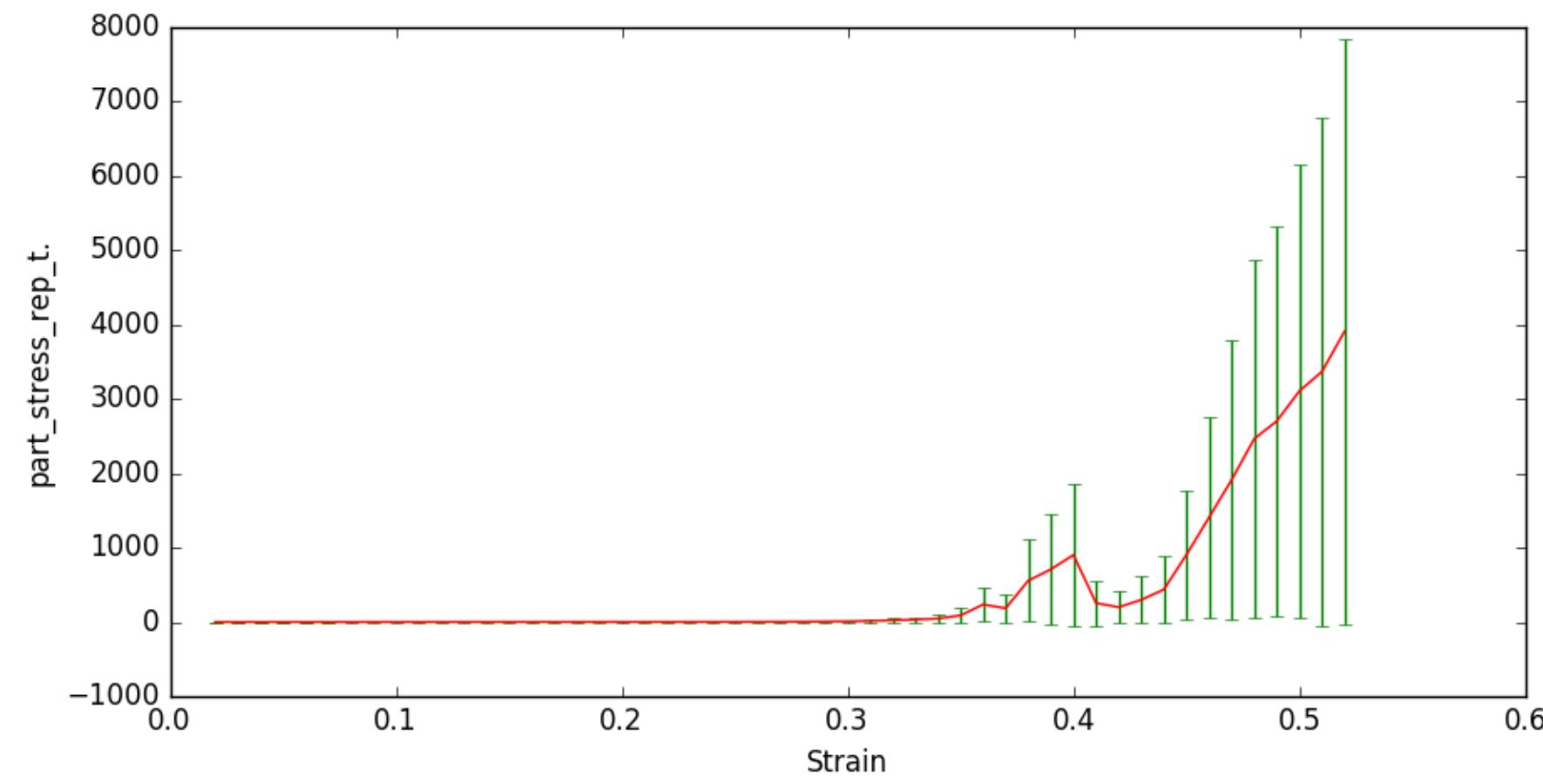
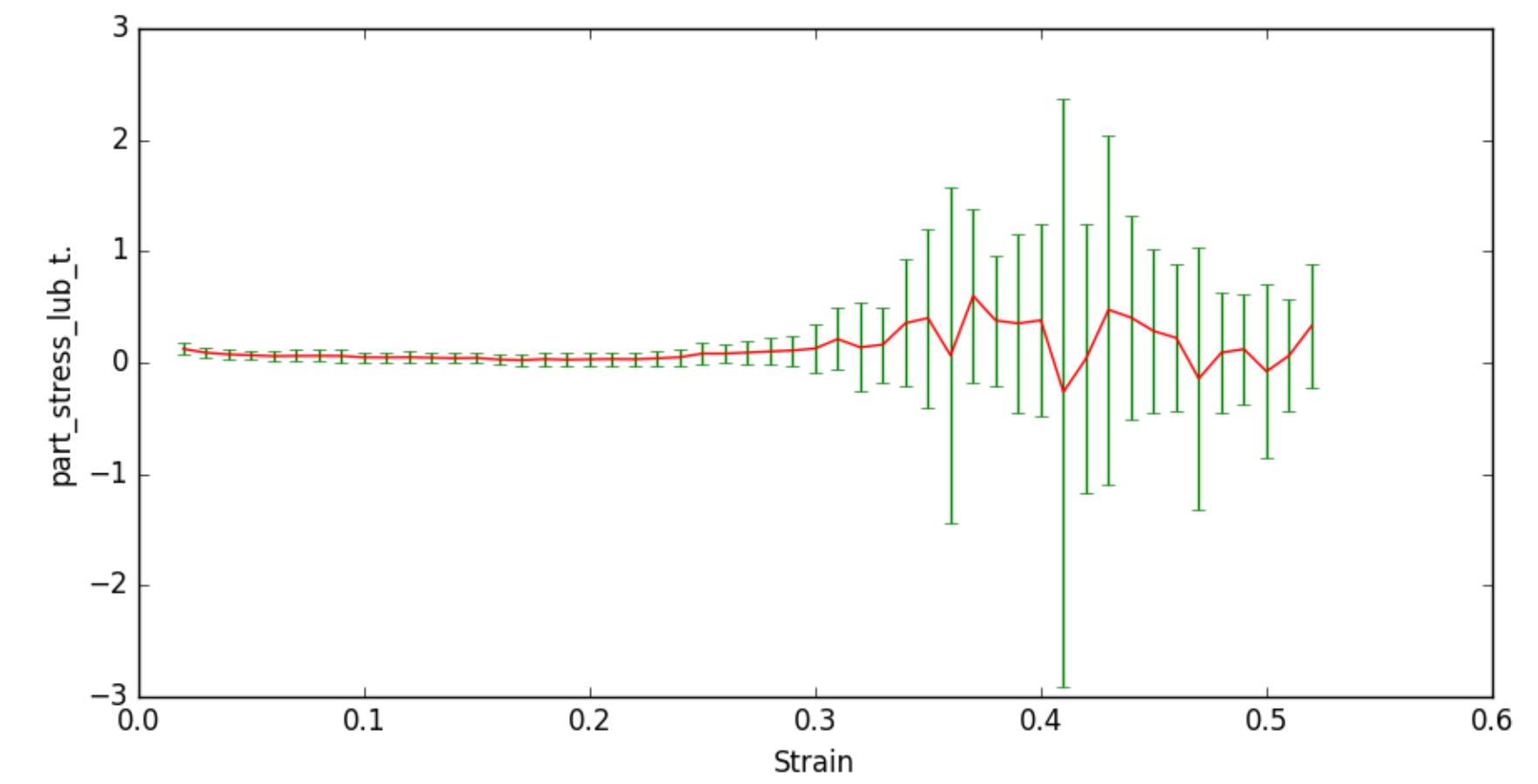
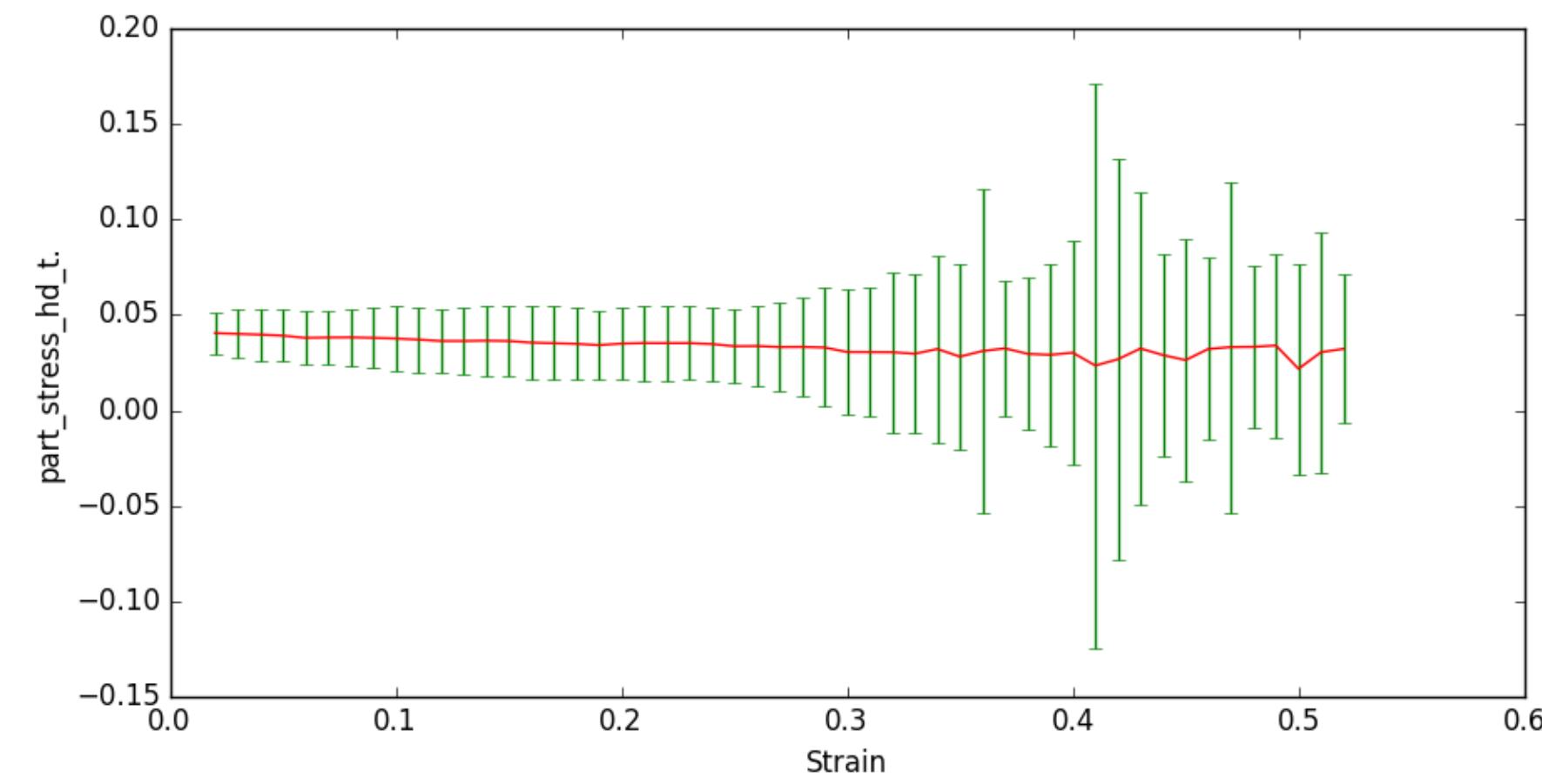
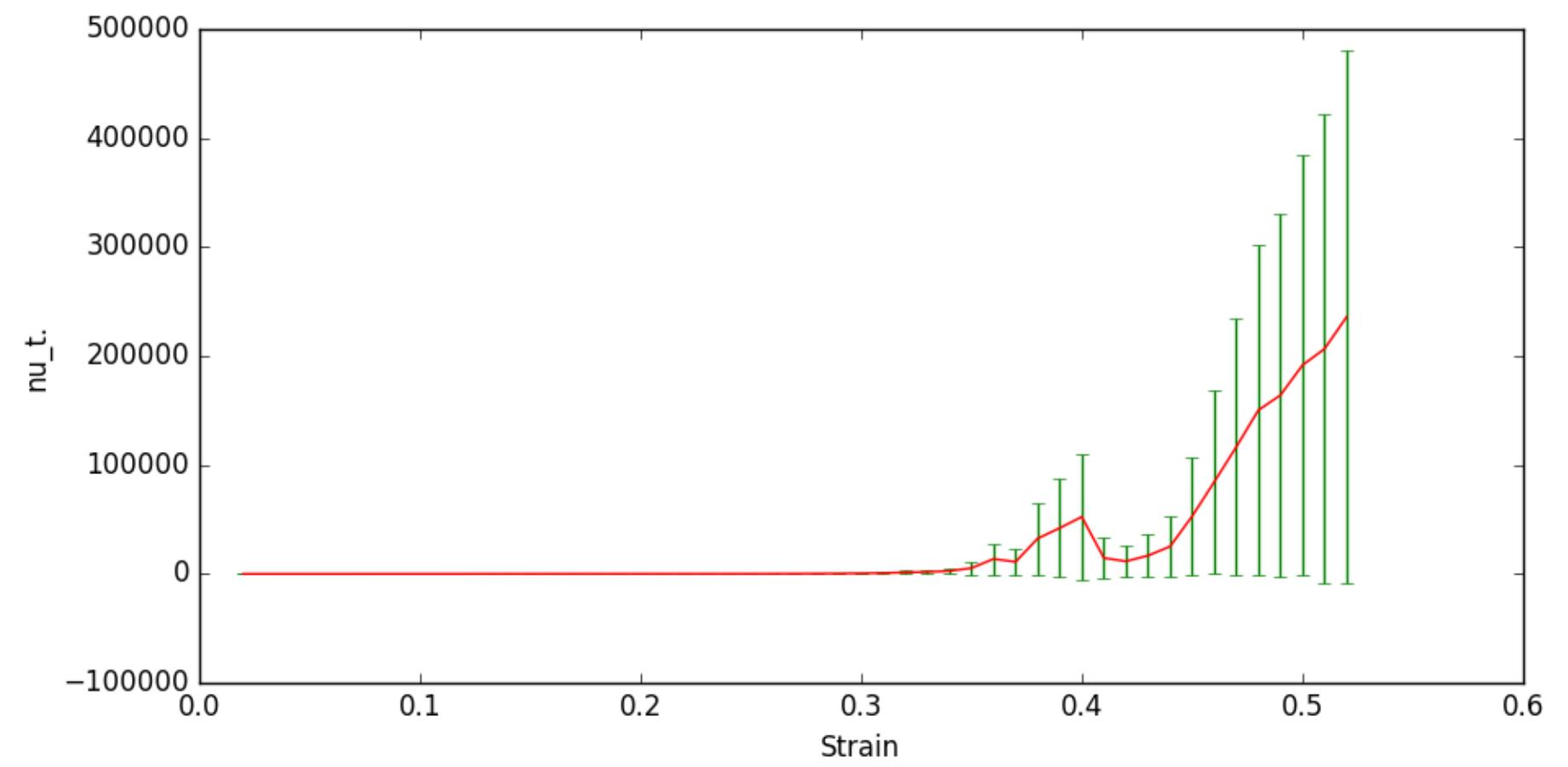
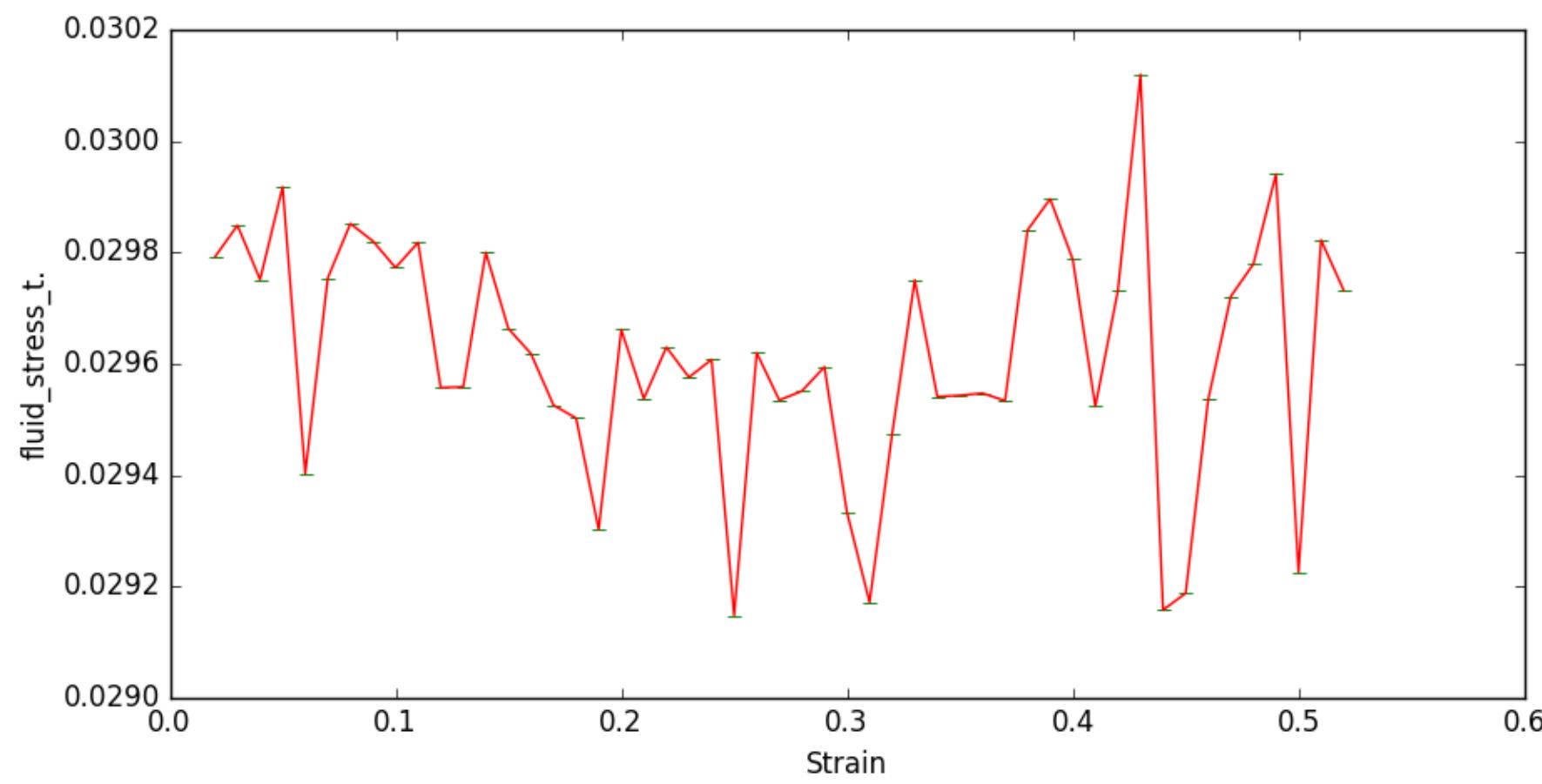
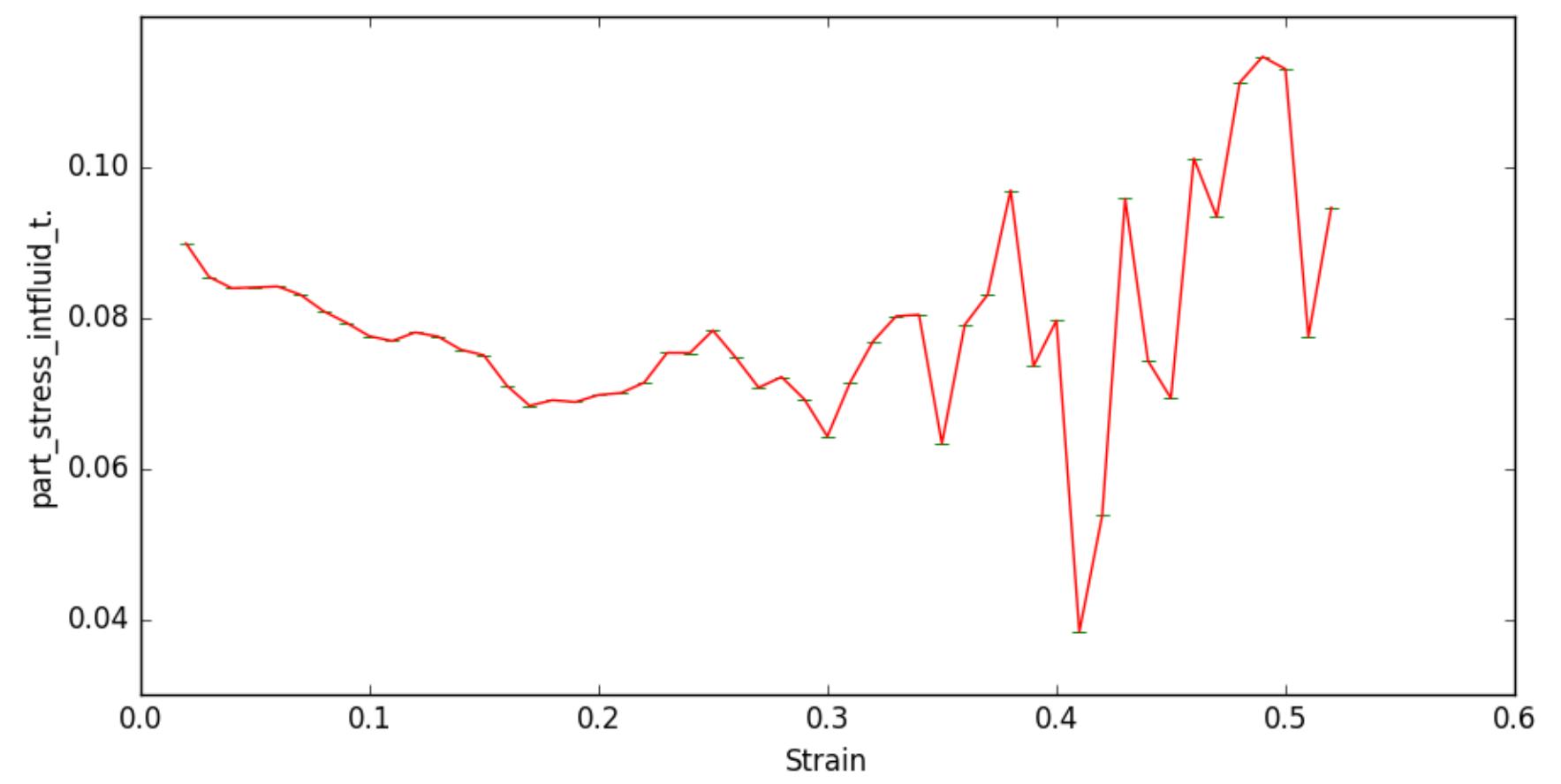
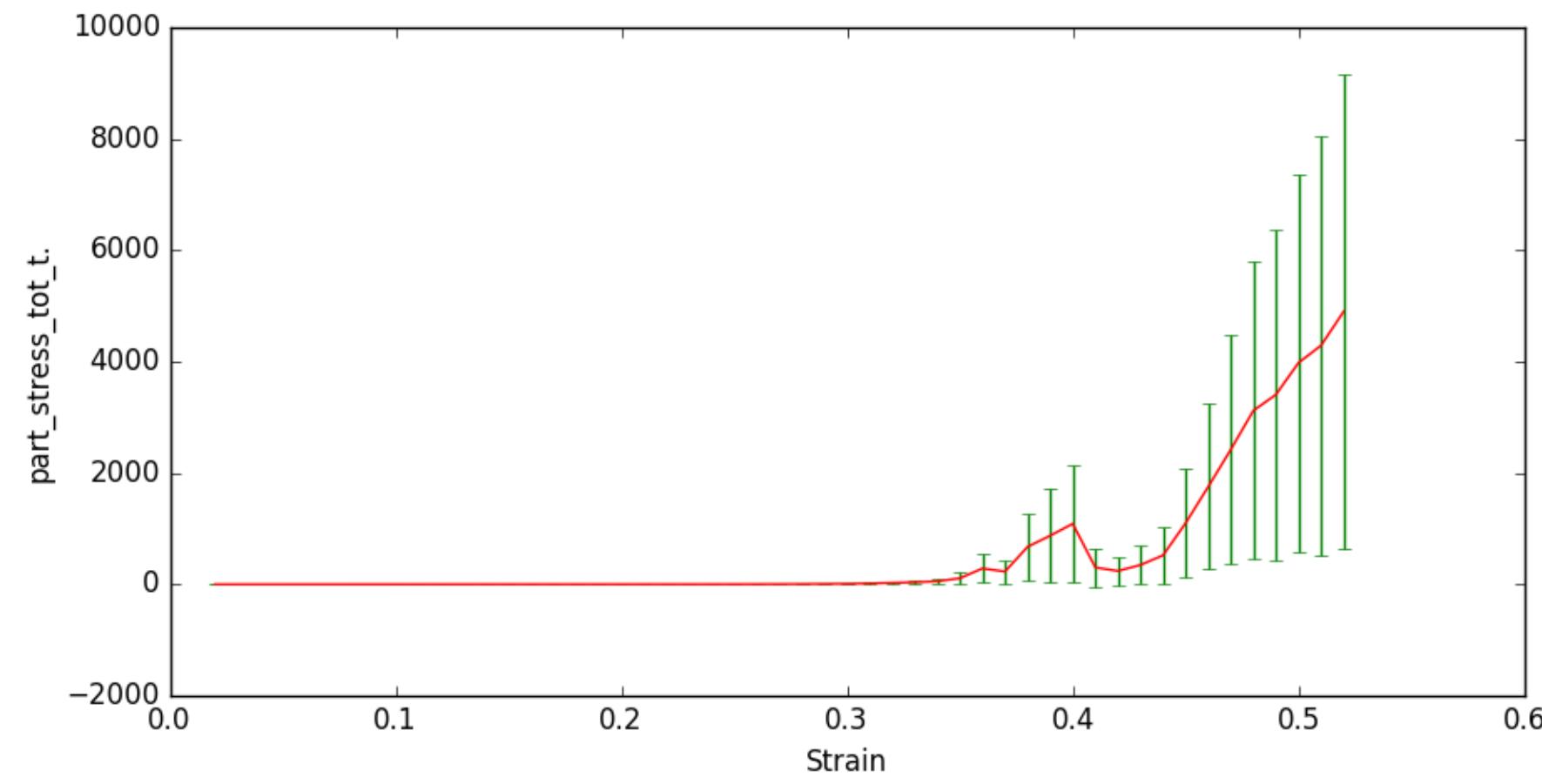


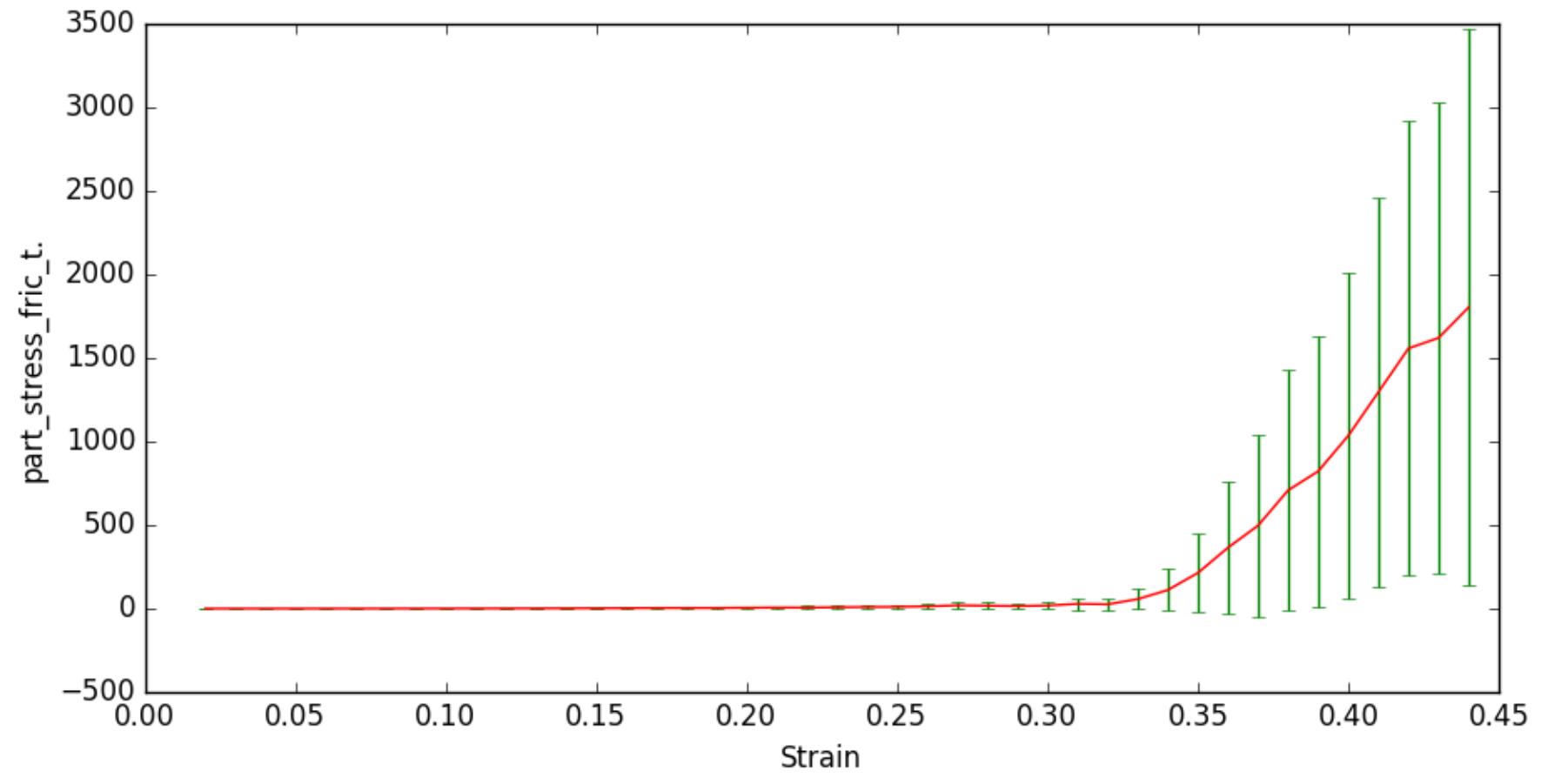
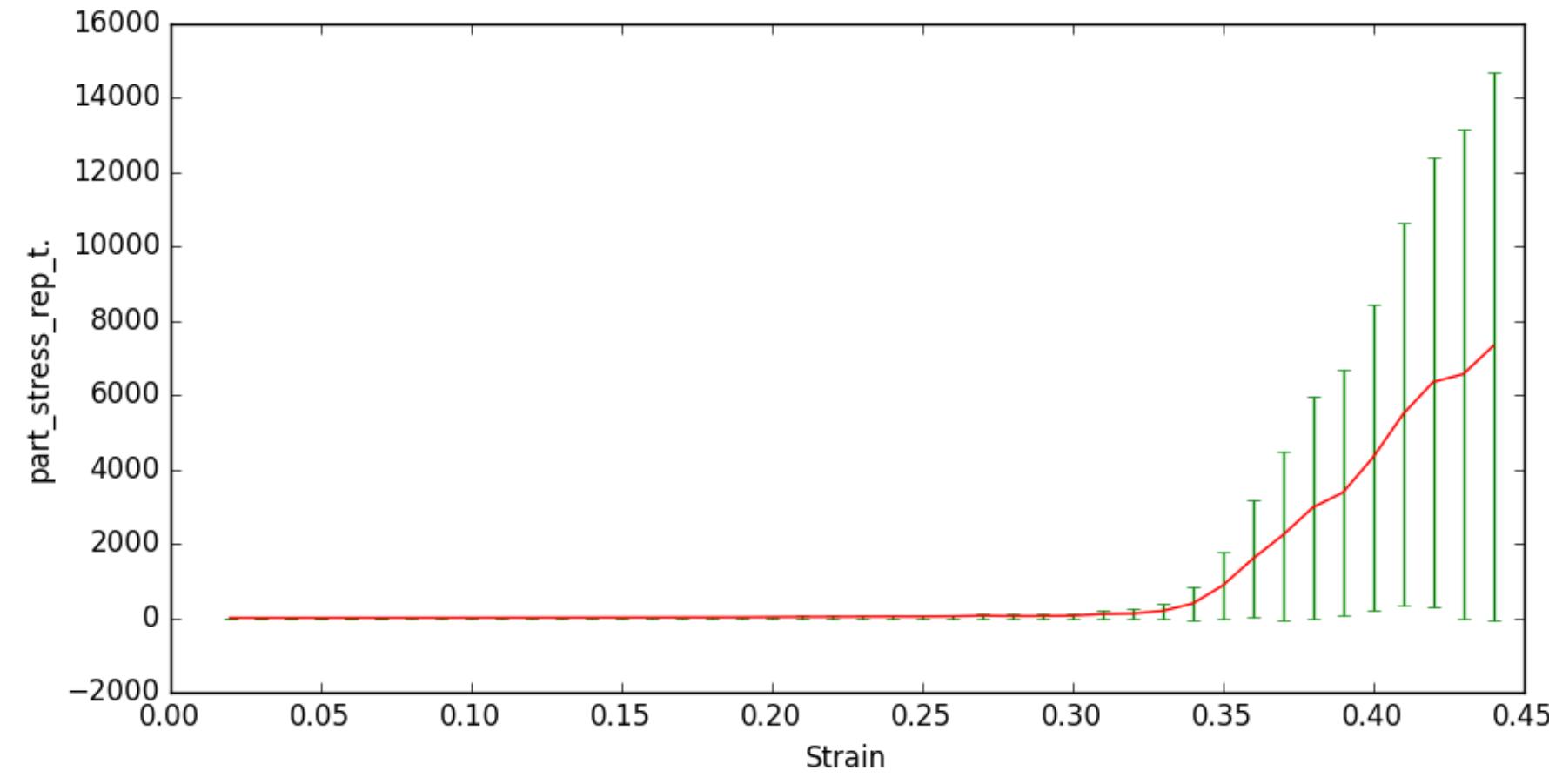
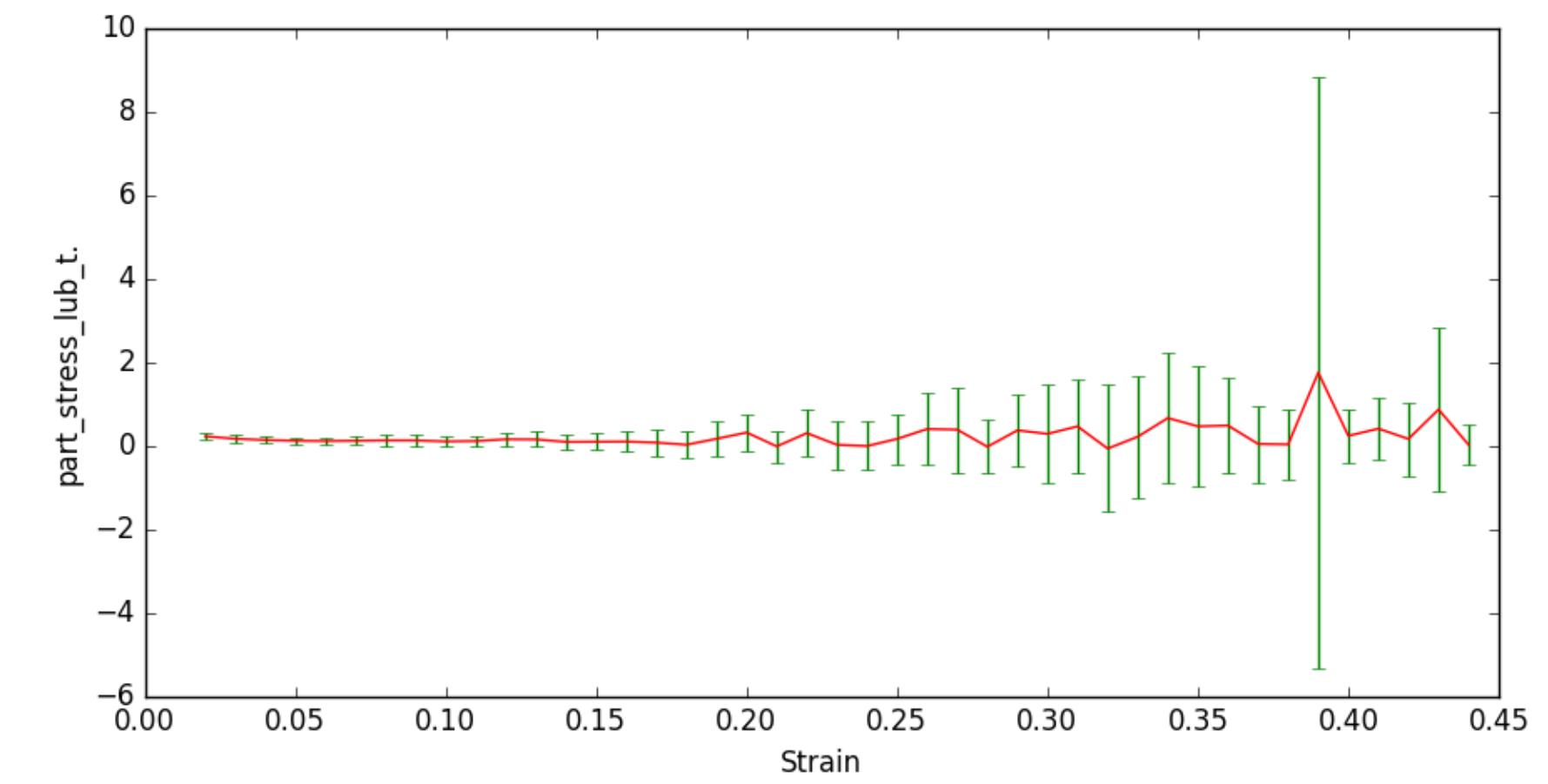
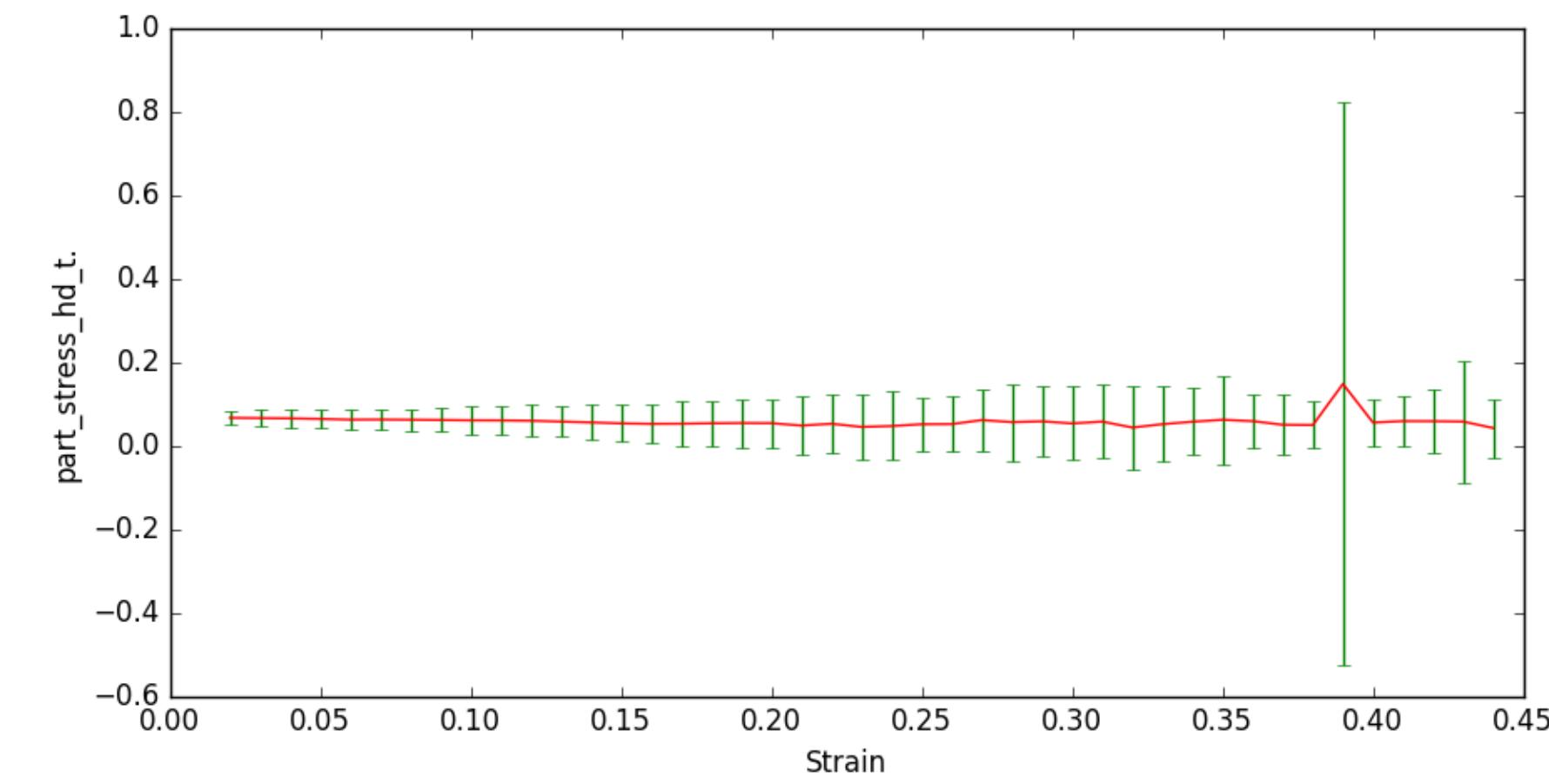
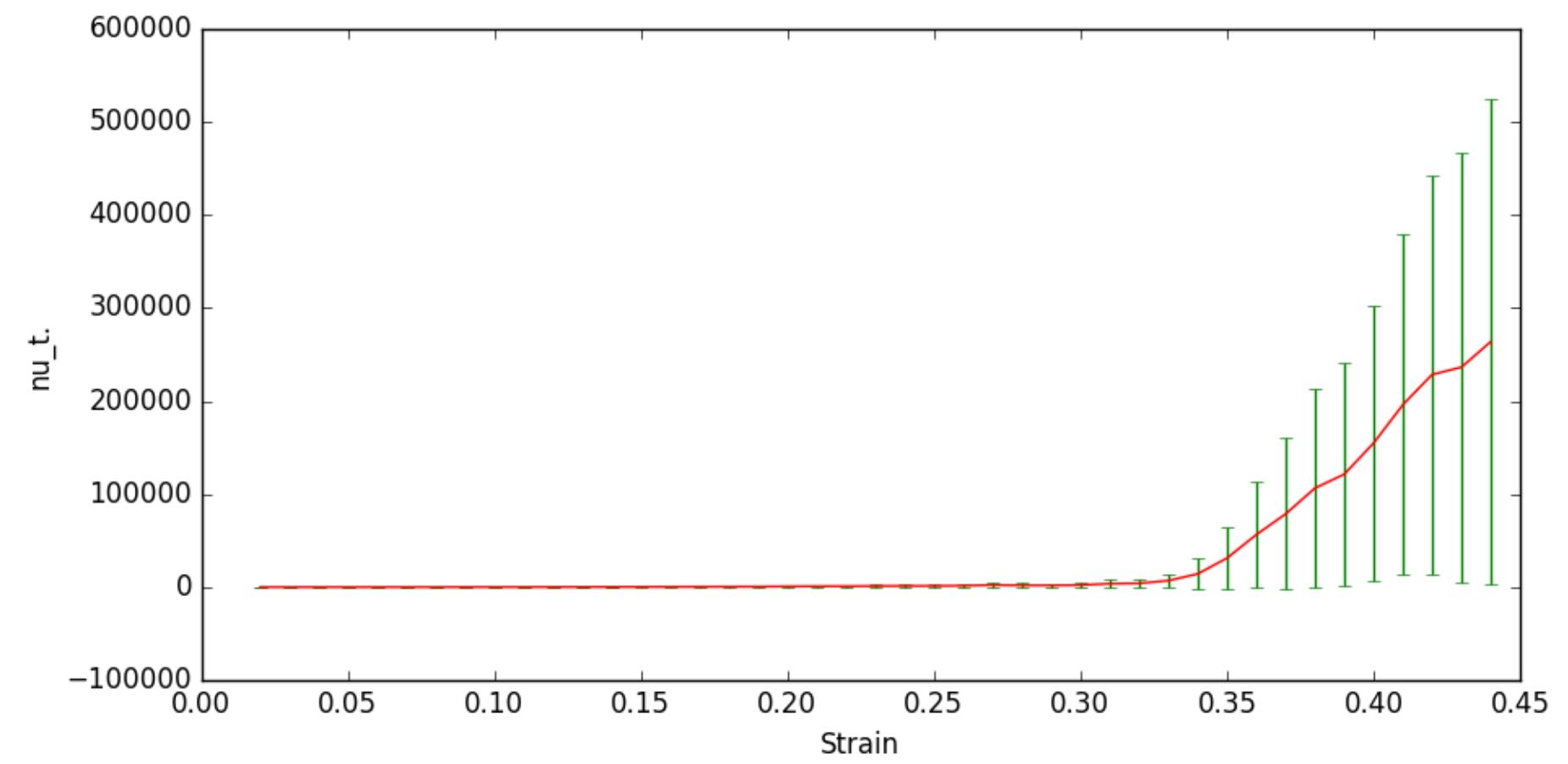
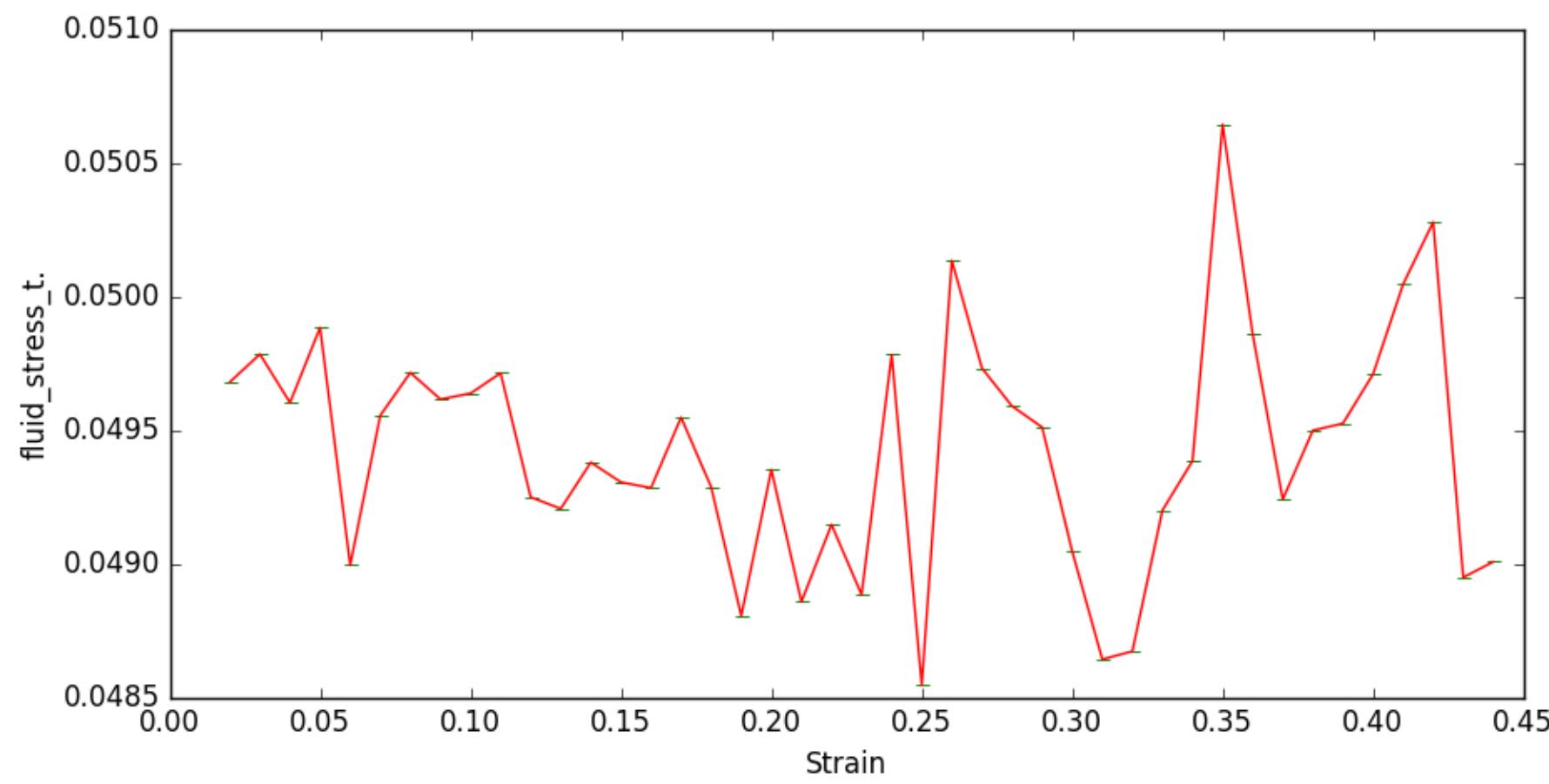
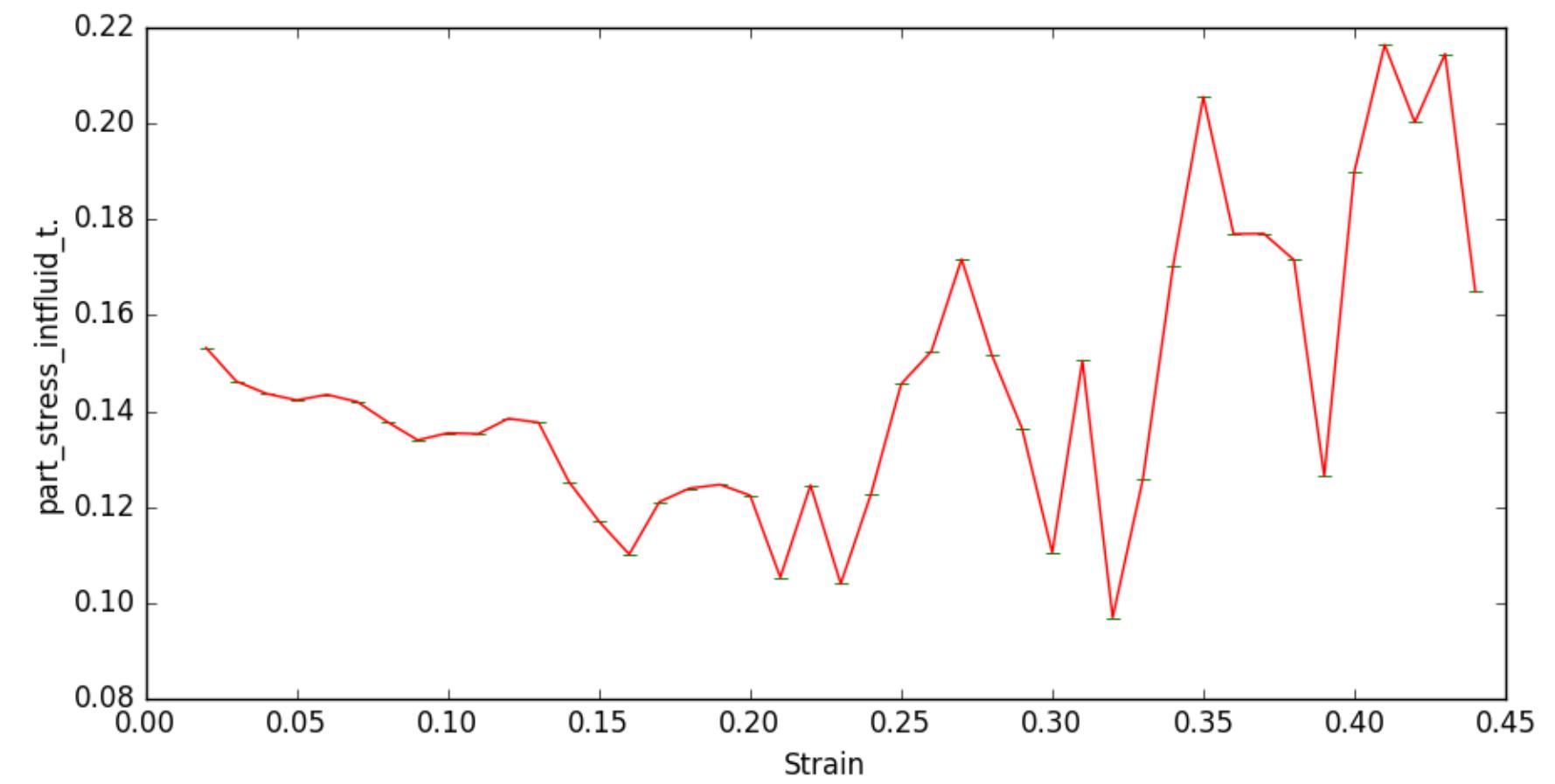
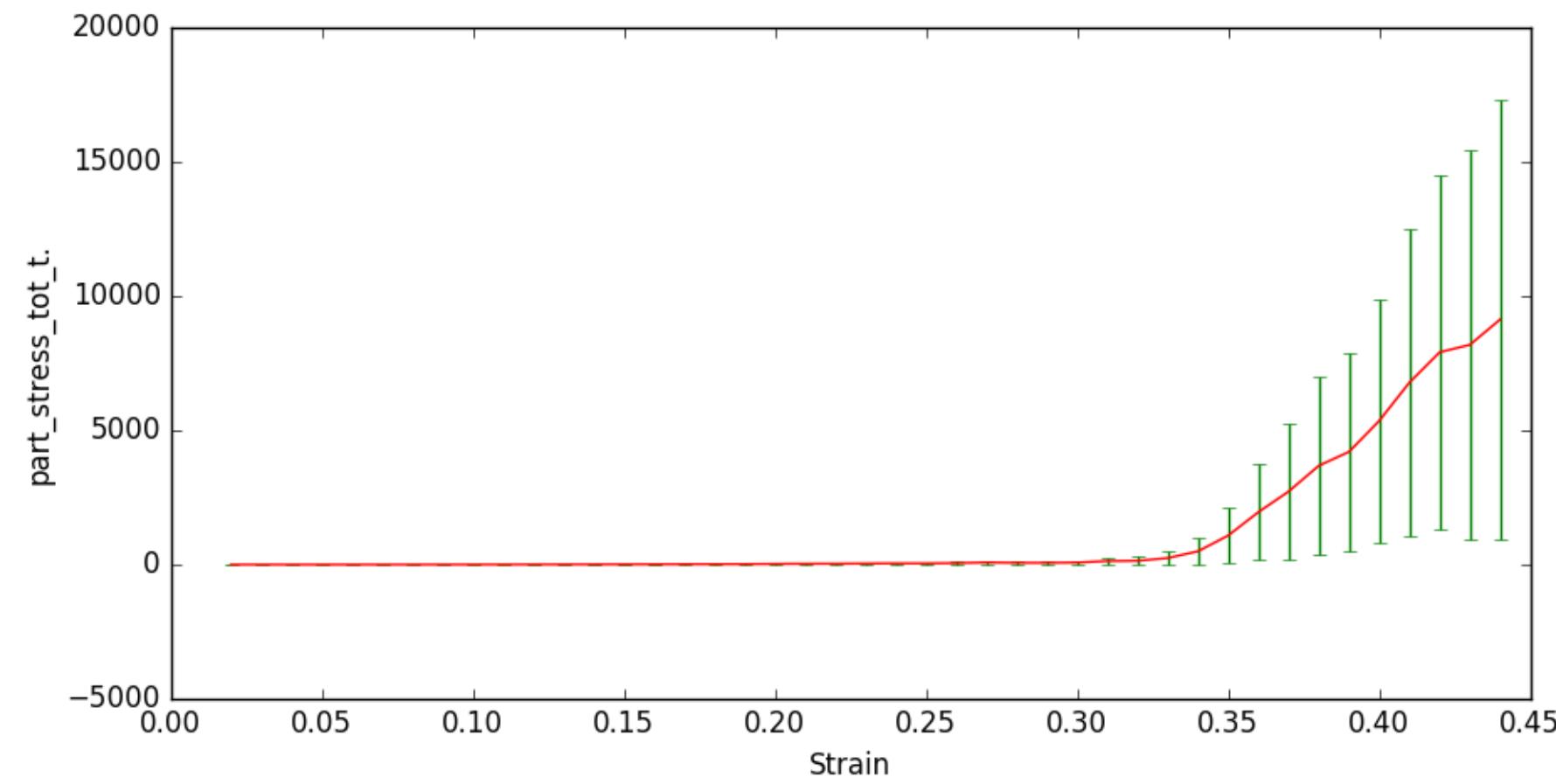


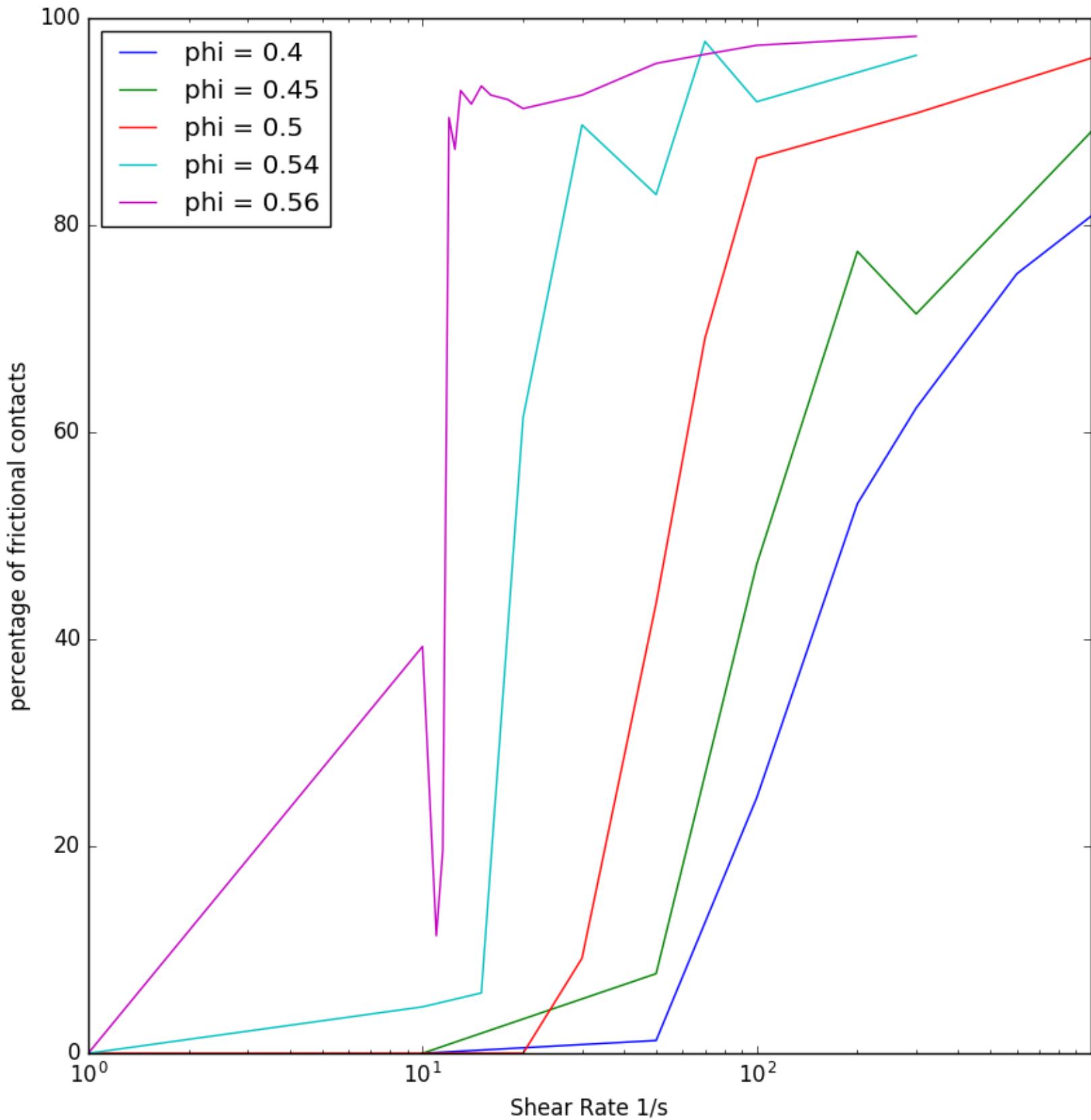


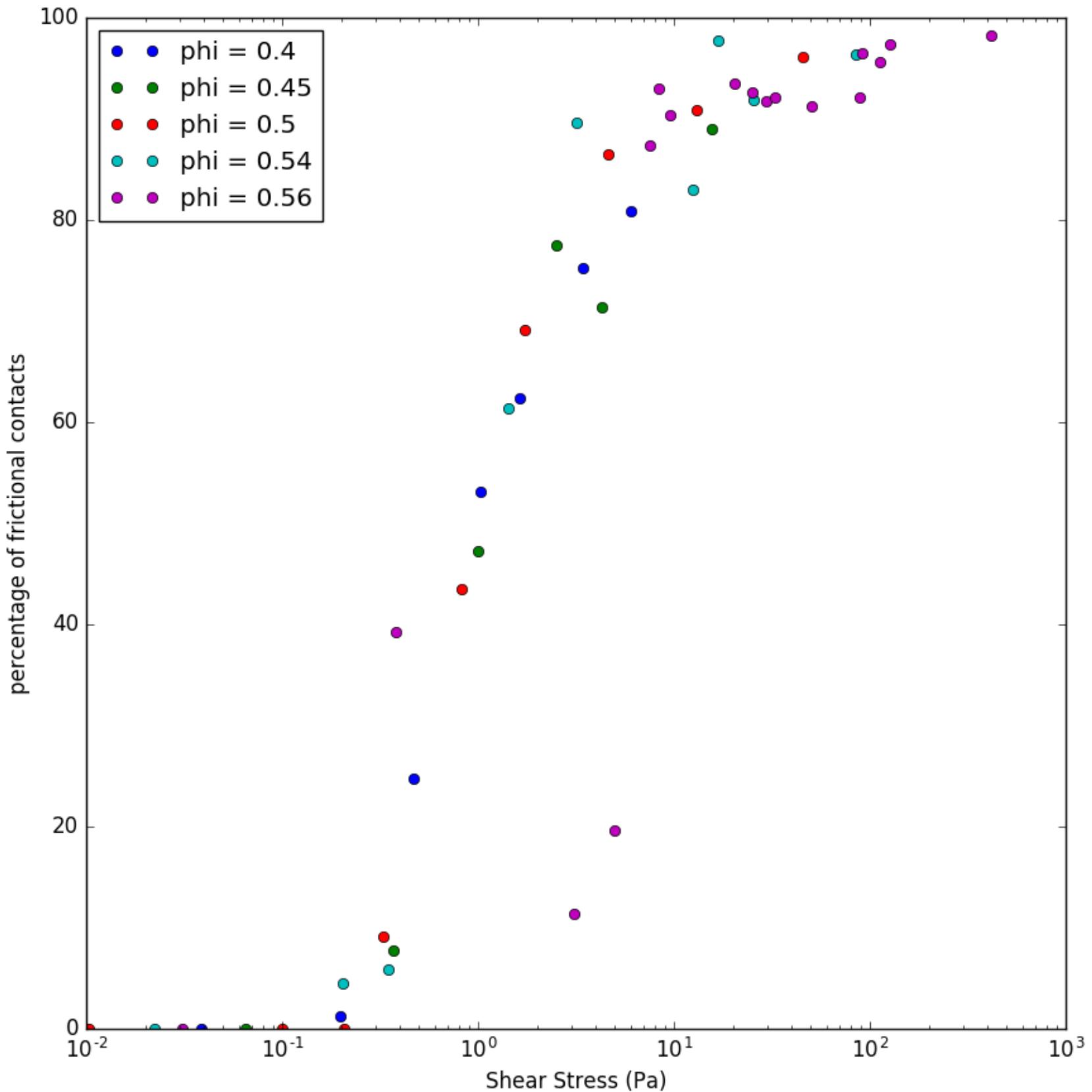




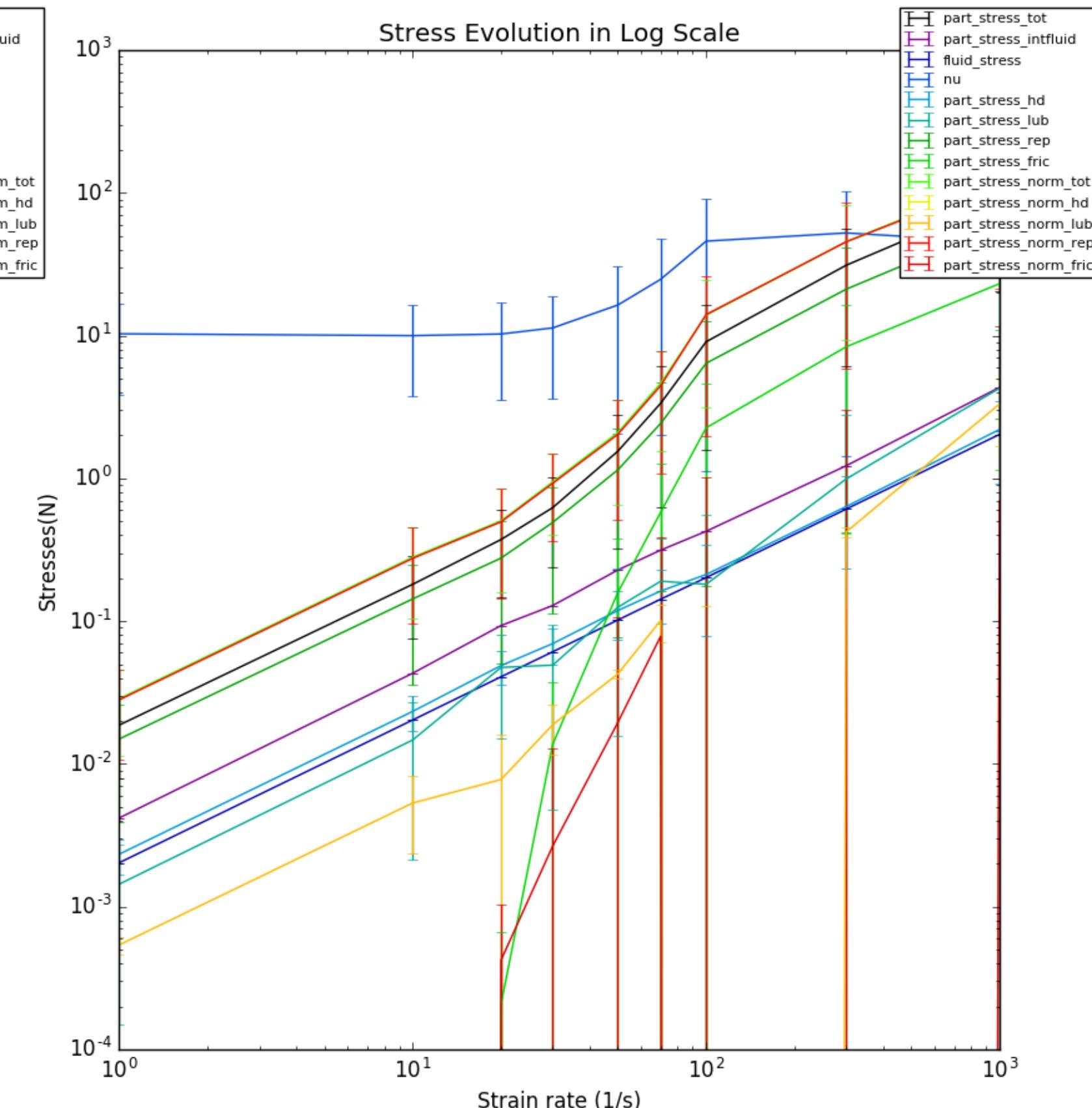
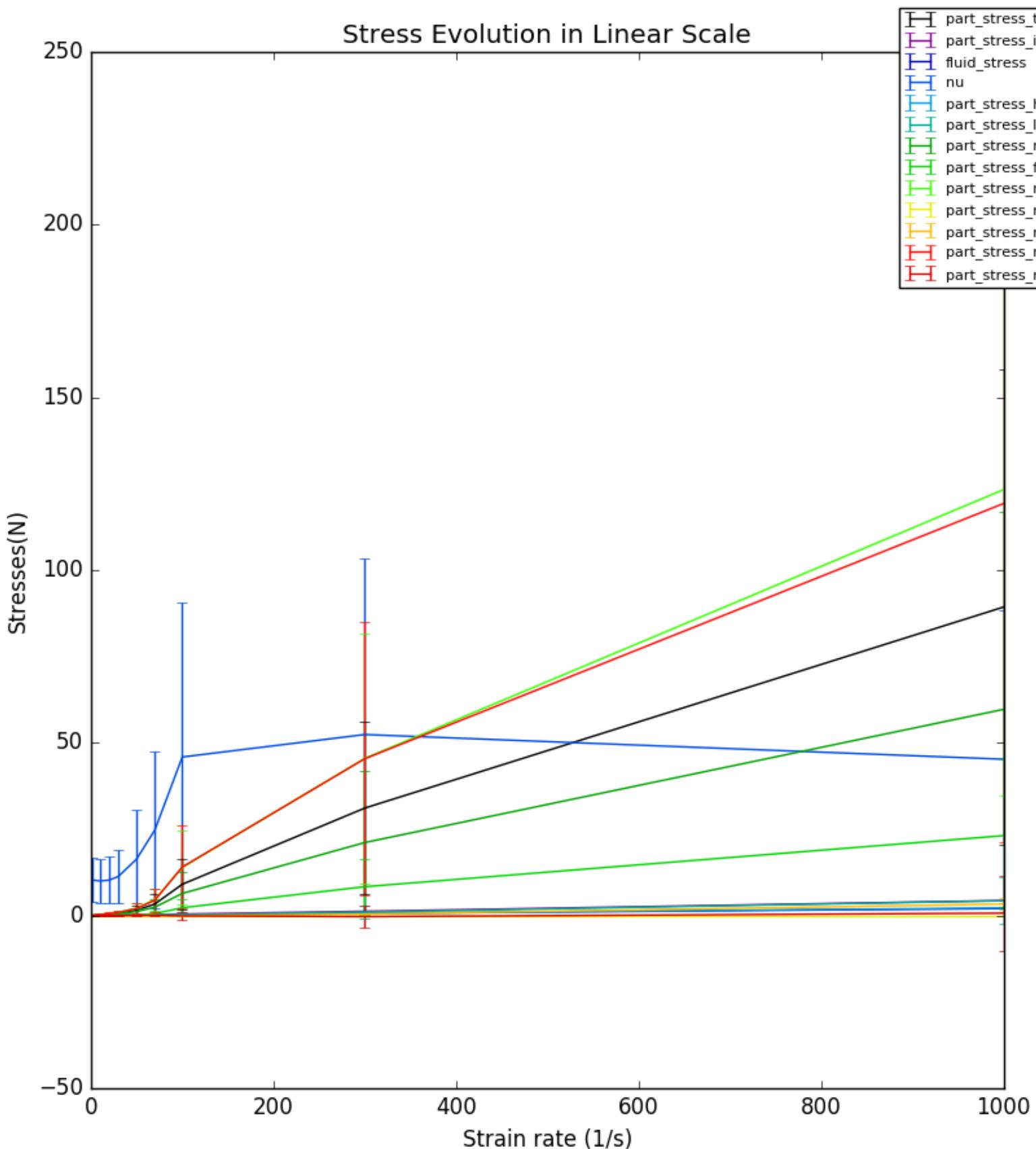




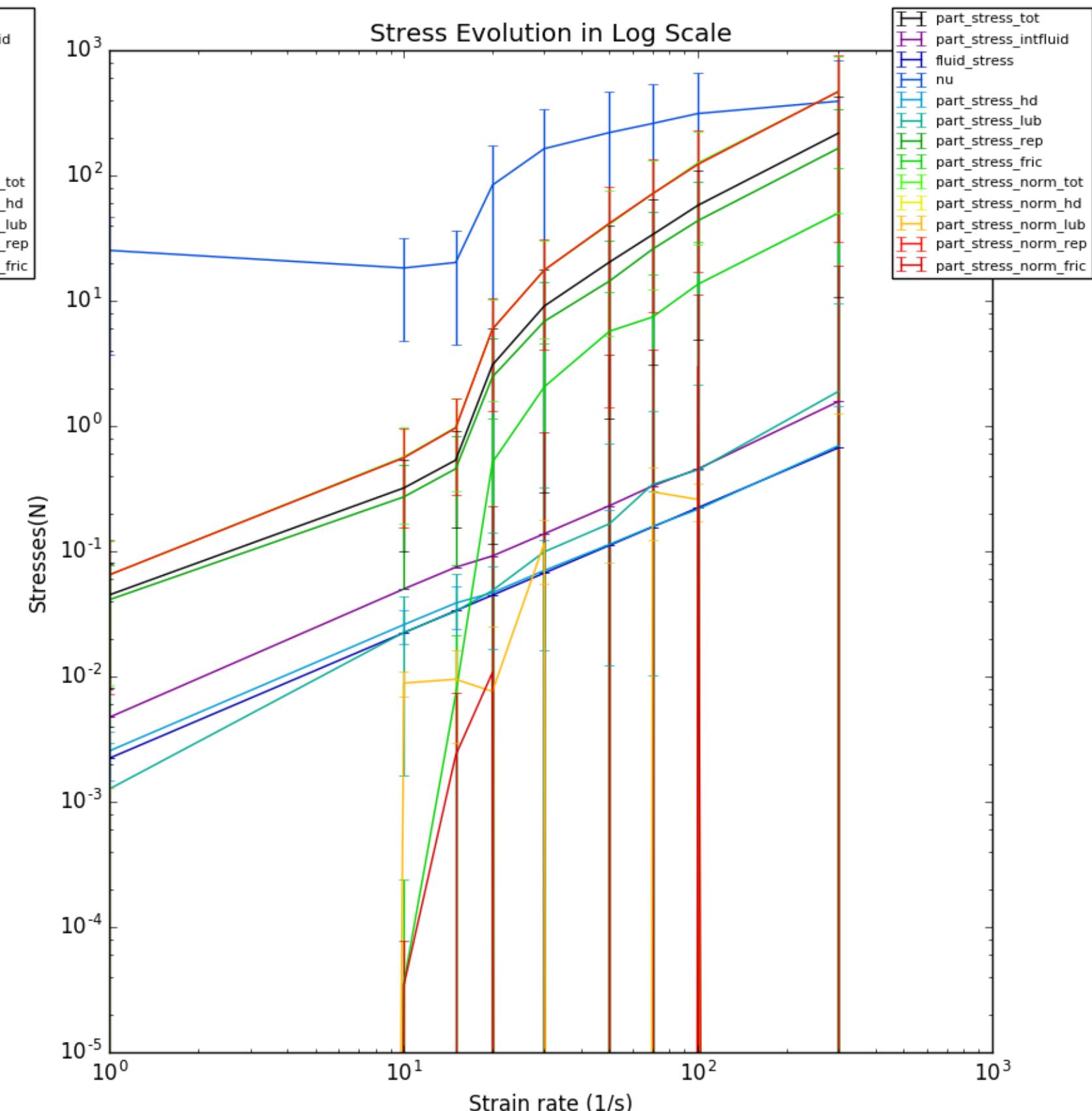
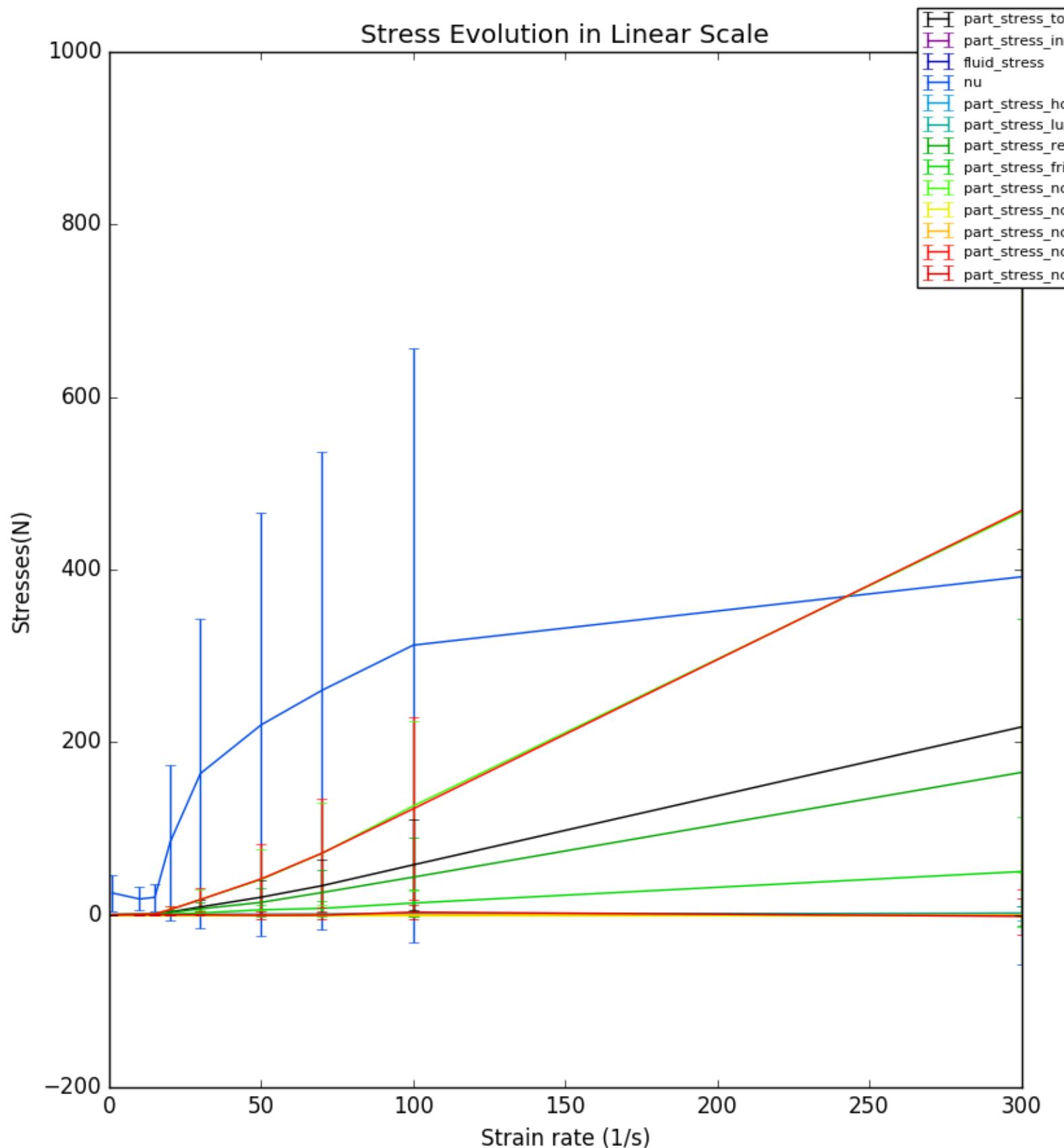




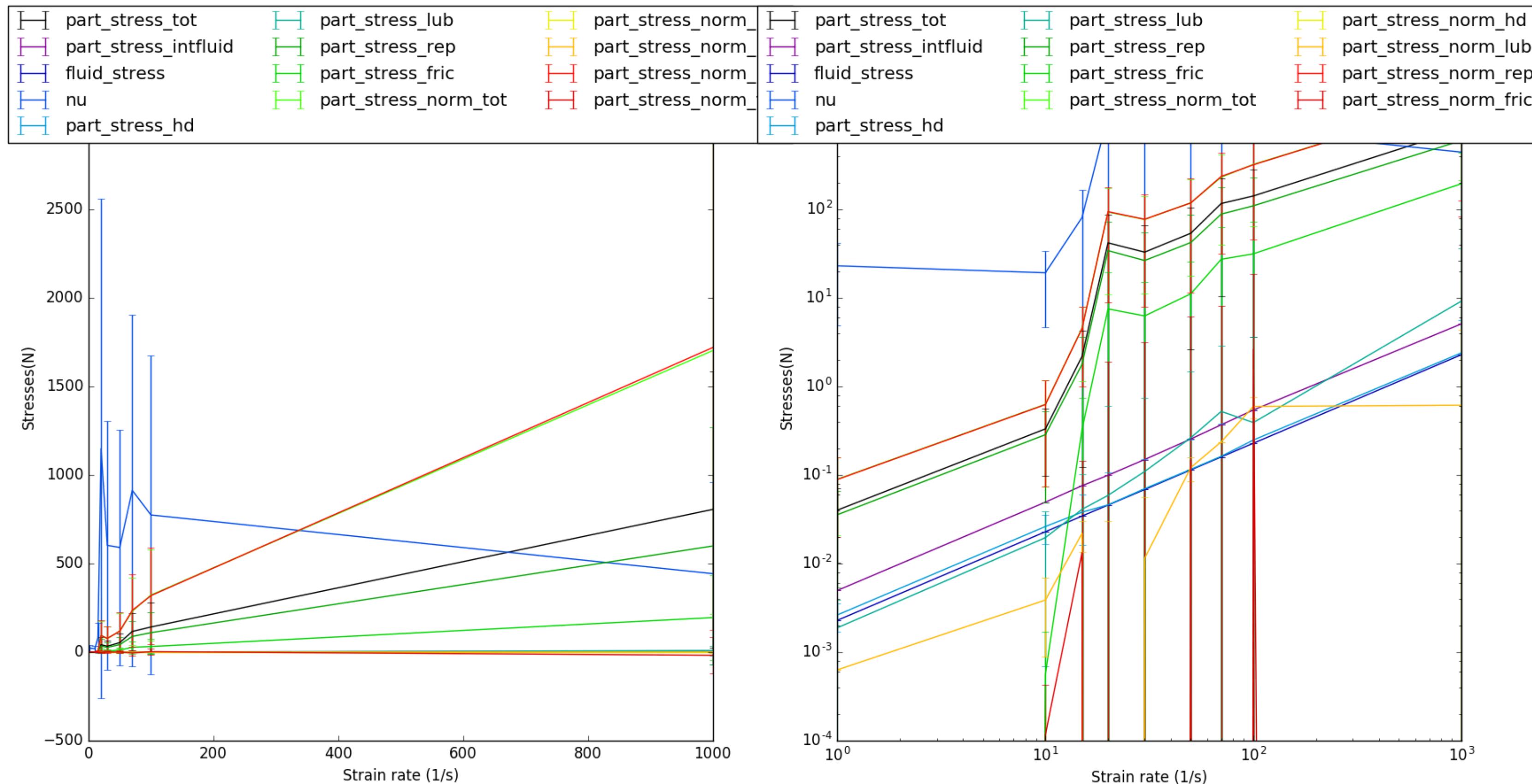
Stress evolution over shear rate for phi=50 ---- left(linear Scale), Right(log Scale)



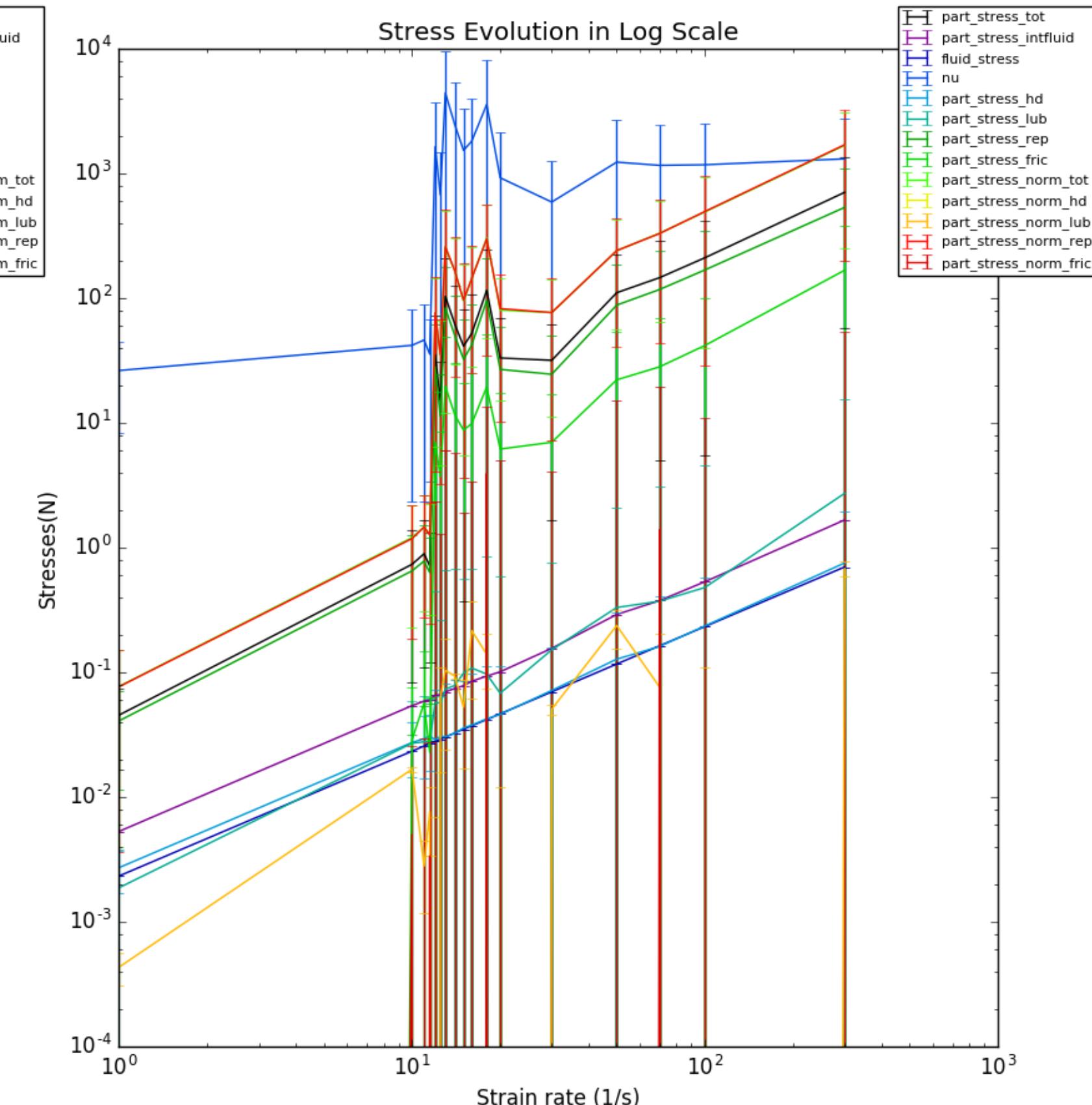
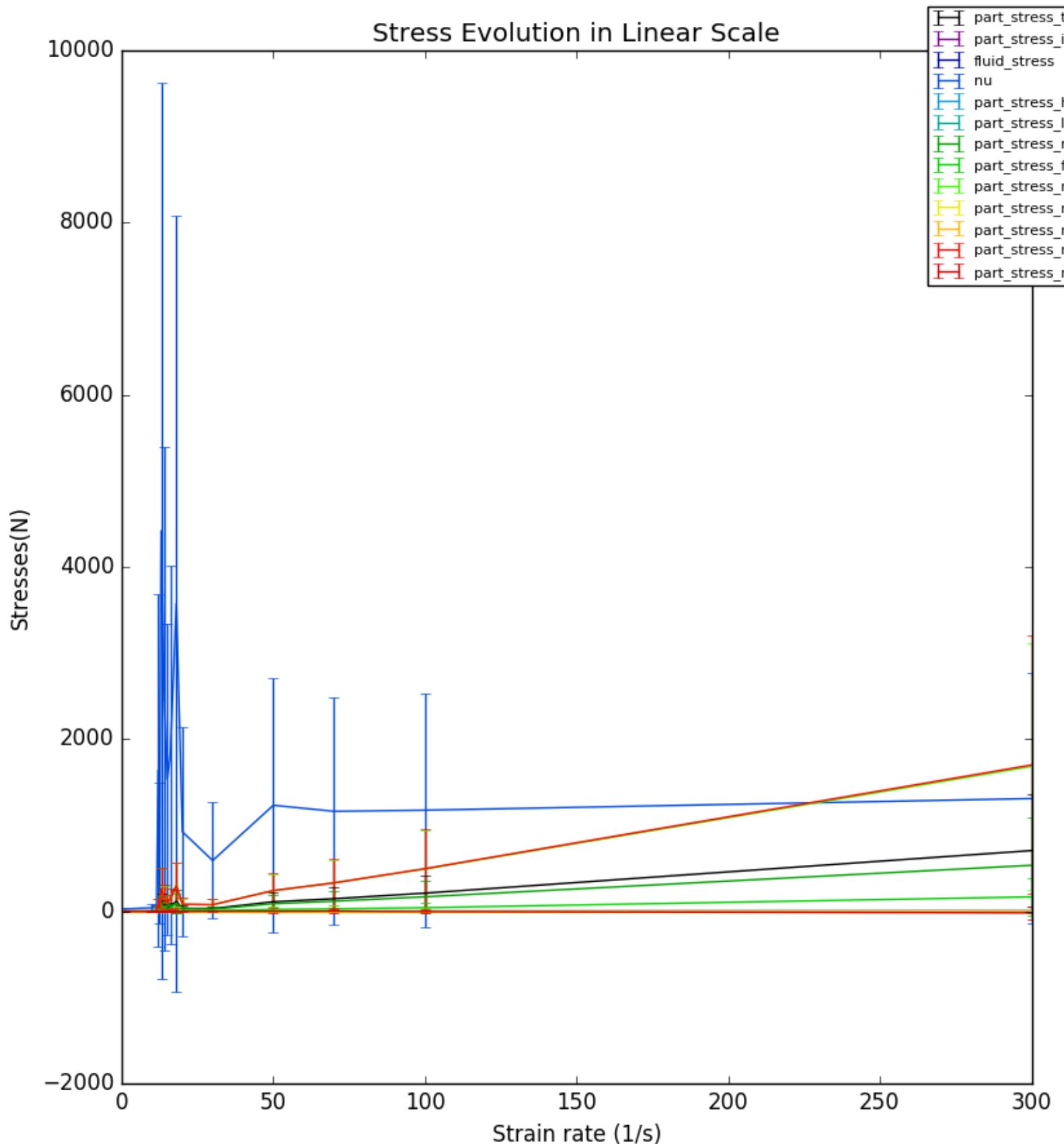
Stress evolution over shear rate for phi=54 ---- left(linear Scale), Right(log Scale)



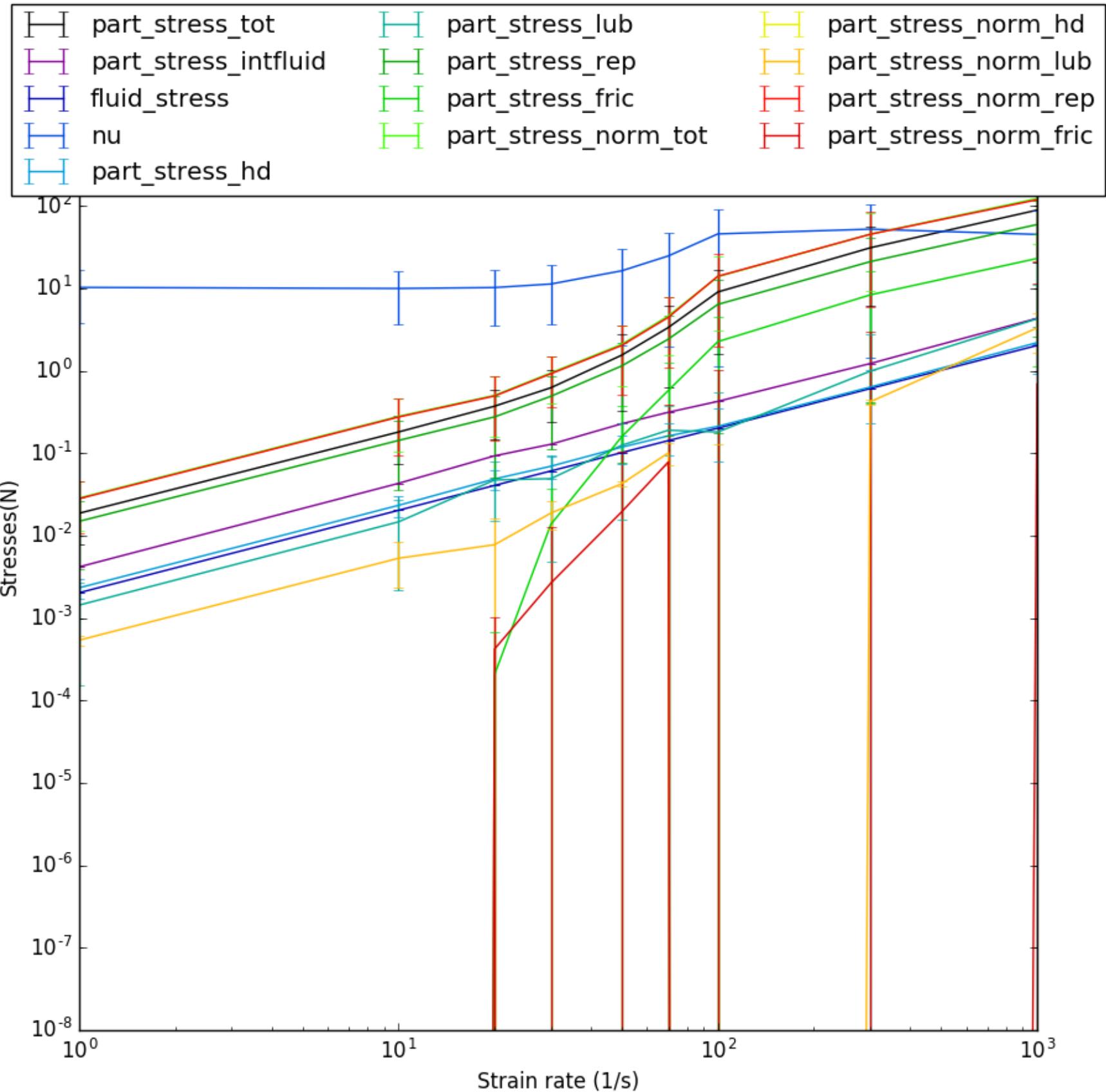
Stress evolution over shear rate for phi=55 ---- left(linear Scale), Right(log Scale)



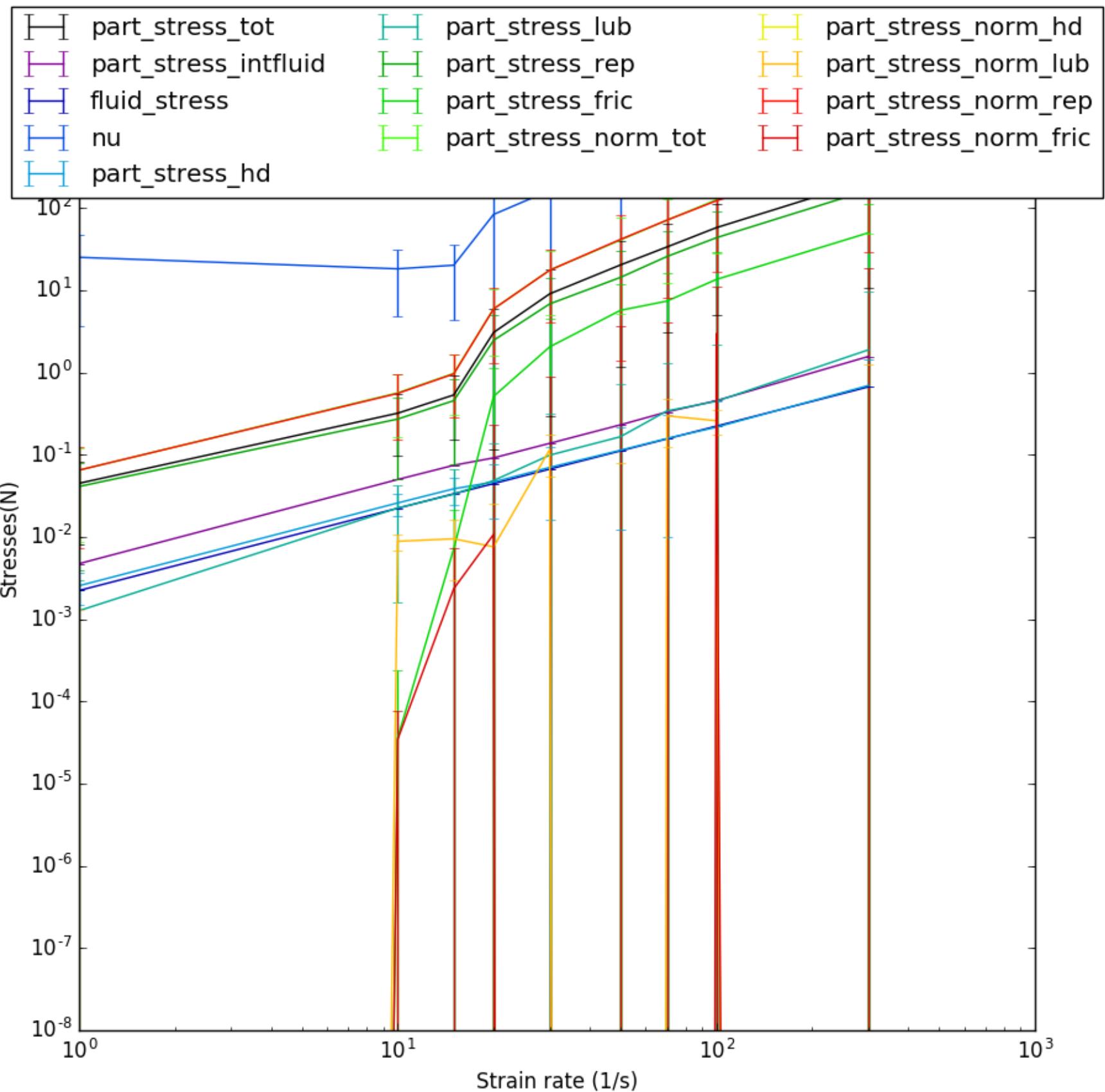
Stress evolution over shear rate for phi=56 ---- left(linear Scale), Right(log Scale)



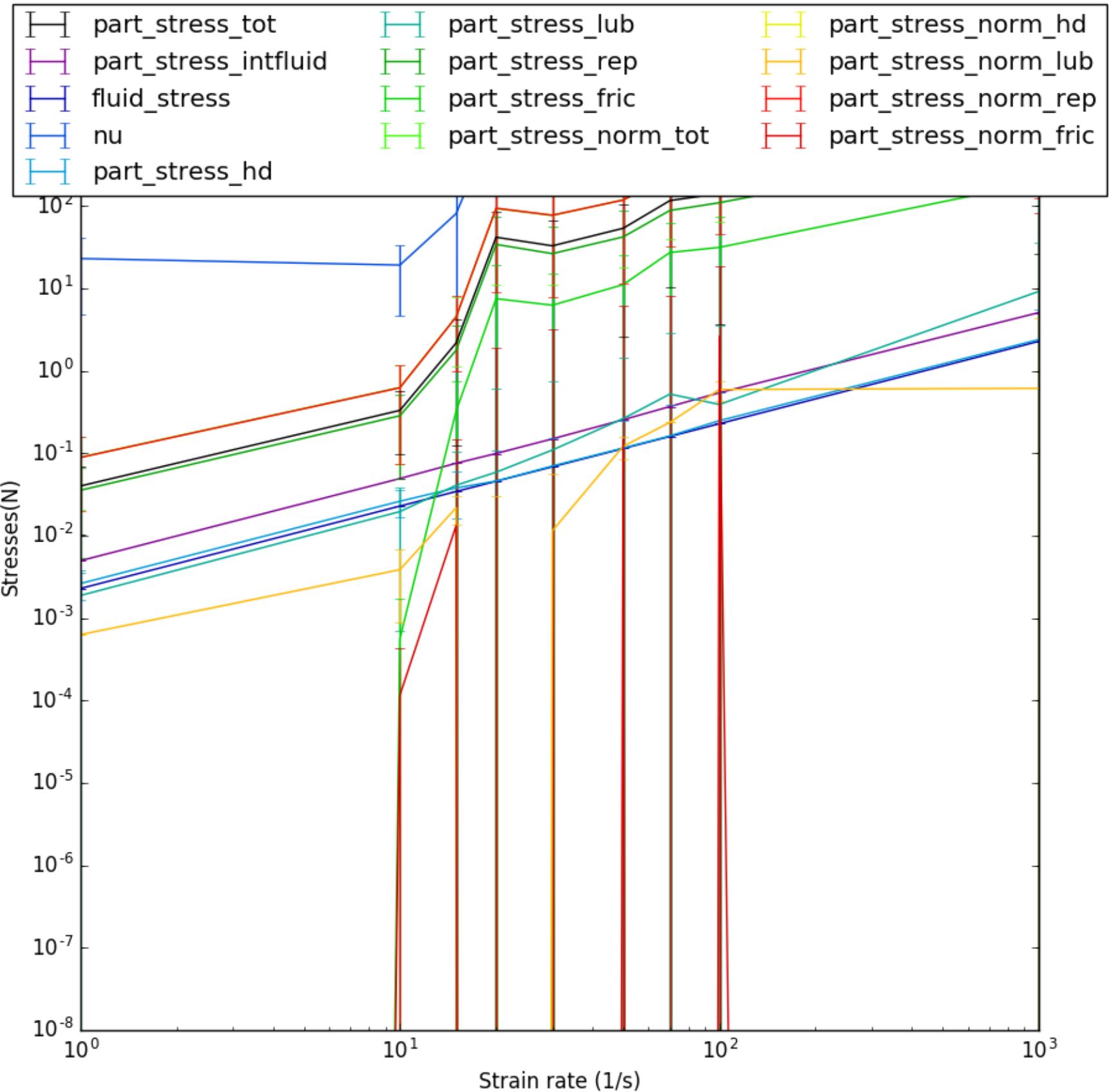
Stress evolution over shear rate for phi=50



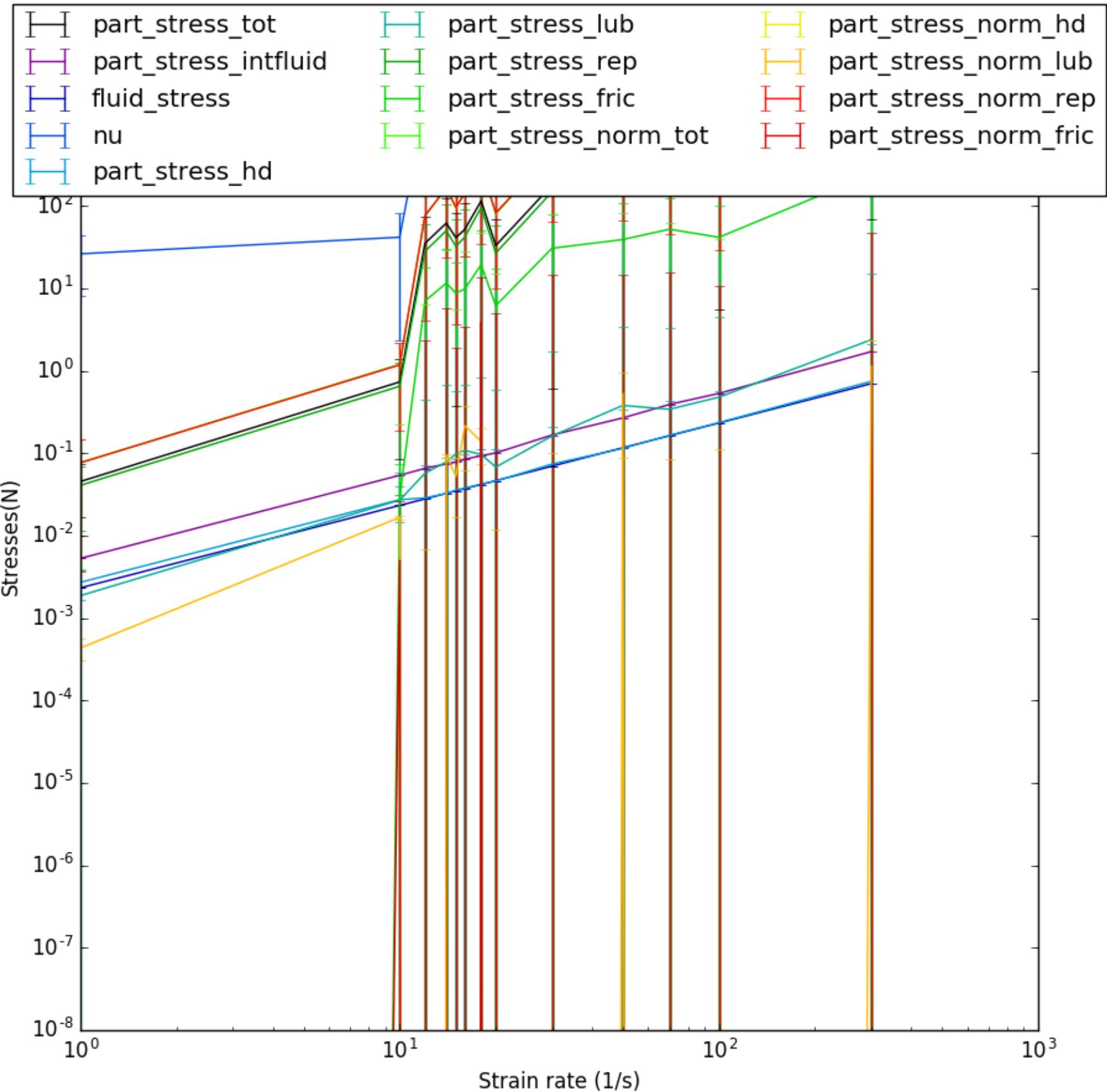
Stress evolution over shear rate for phi=54



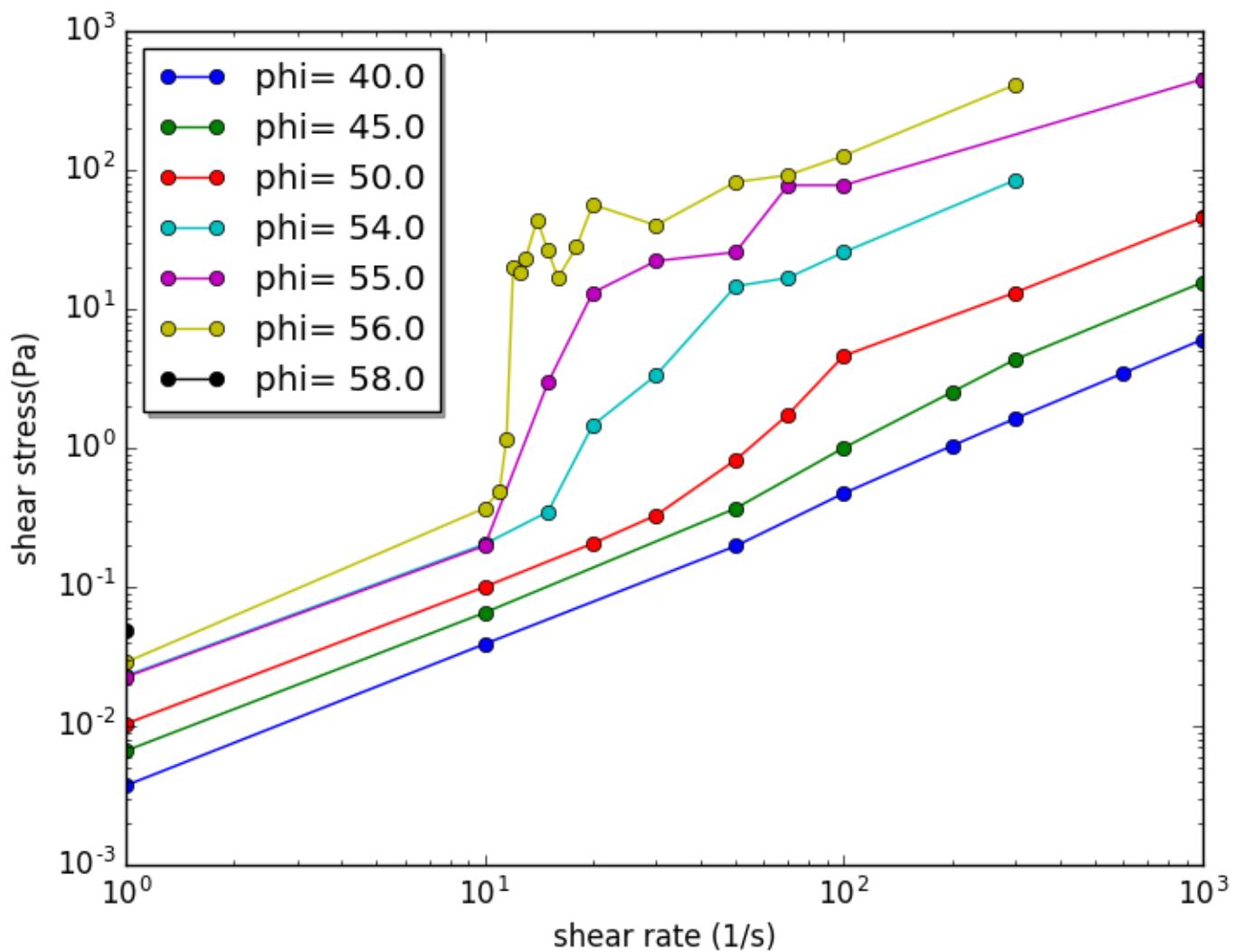
Stress evolution over shear rate for phi=55



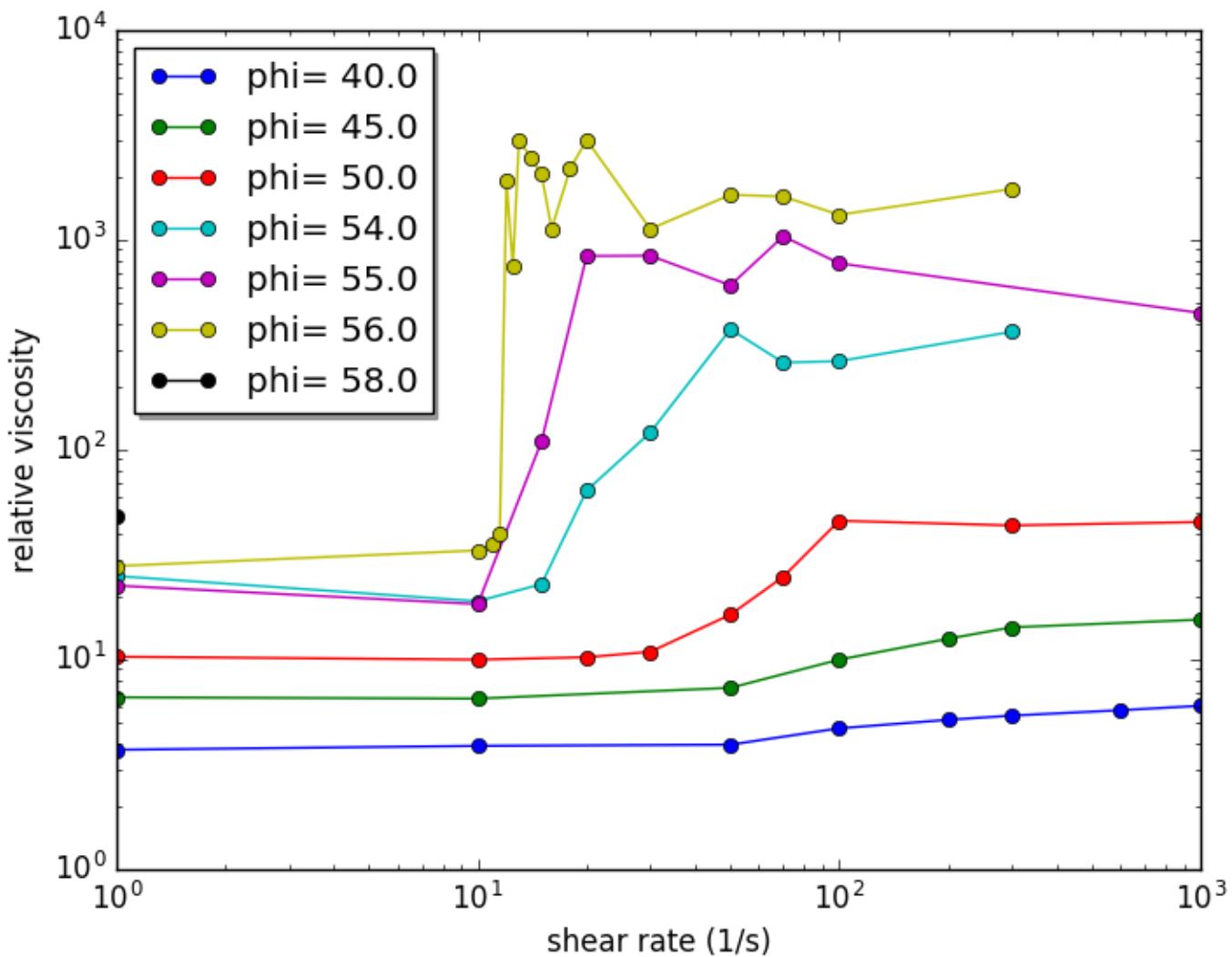
Stress evolution over shear rate for phi=56

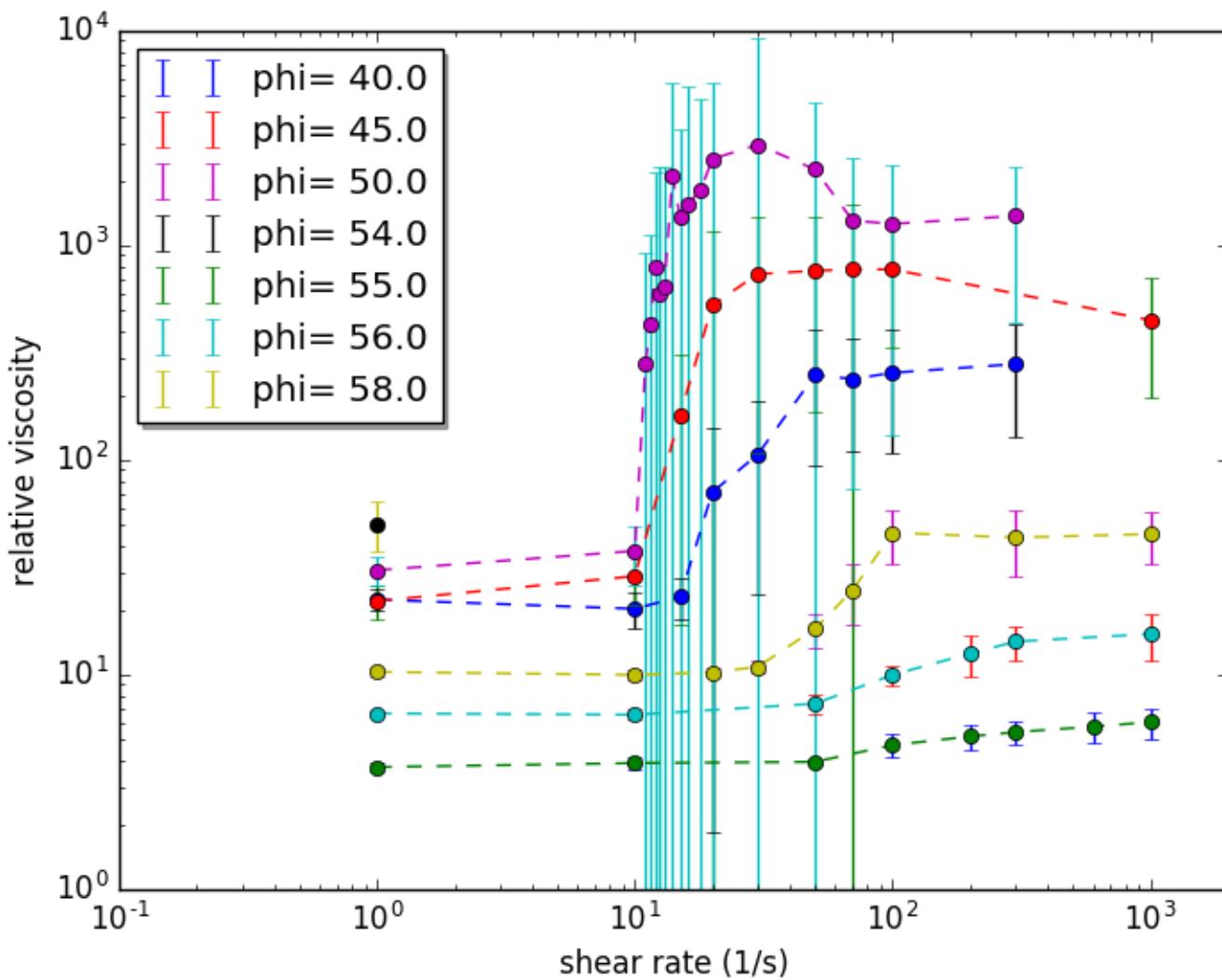


shearstress_vs_shearrate



viscosity_vs_shearrate





viscosity_vs_shearstress

