



Vergleich des Einflusses der Input Features

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22. Dezember 2020

ANN Aufbau



1. ResNet mit 10 ResNet Blocks
2. 200 Neuronen je Layer (823k Parameter)
3. Daten (Training und Test) sind Log-transformiert und dann normiert (Standard Scaler)
4. Loss function: MSE
5. Activation function: ReLU
6. Batch Size: 128 (sehr klein).
7. Learning rate: zwischen $1e-3$ und $1e-4$
8. Vorhersage von `omega_DNS`!



TRAINING:

Gemischte Datenbank bestehend aus den DNS Daten von

$u'/sL = 5, 9, 15$

Datenbank ABC

Filterweiten: $fw = 4, 8, 16, 24, 28, 32, 40$

TEST:

$u'/sL = 7.5$

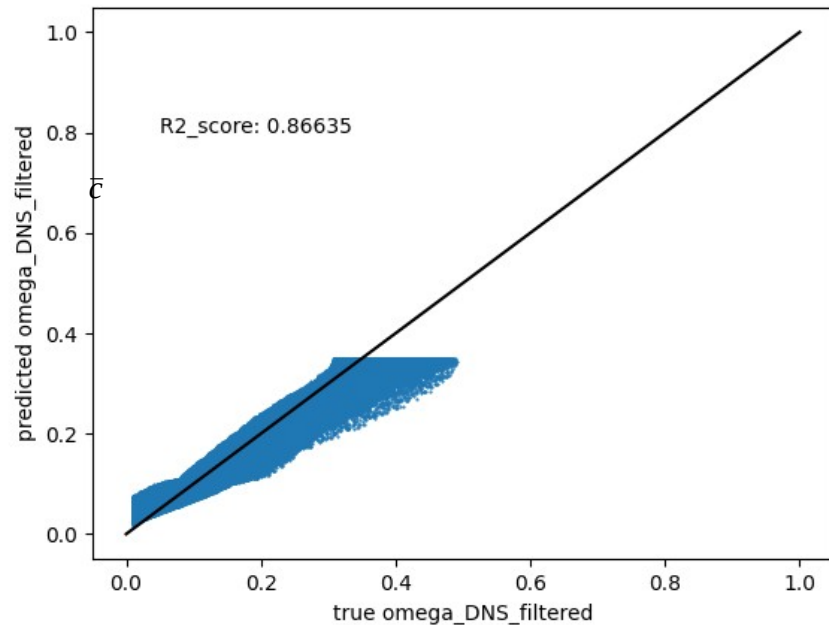
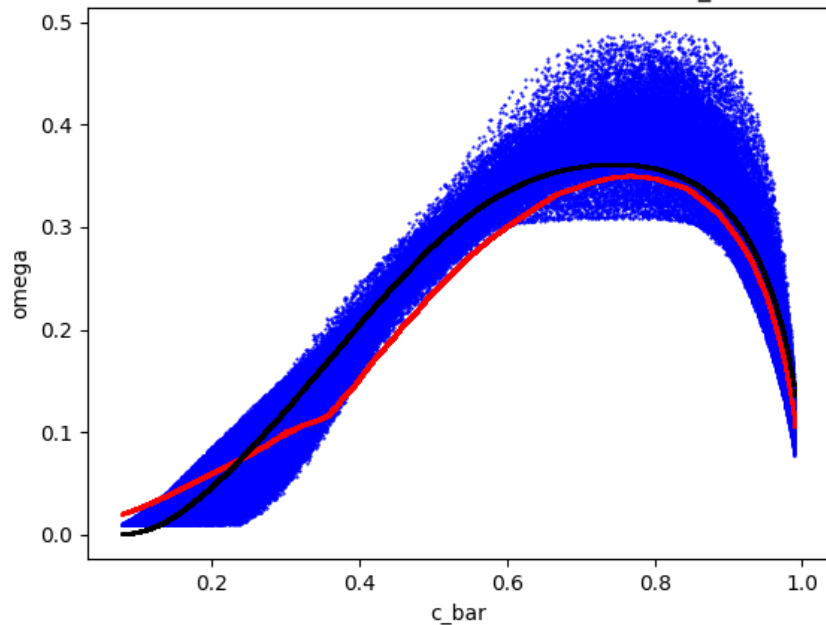
Filterweite: $fw = 20$ (ANN wurde darauf nicht explizit trainiert)

Features: c_{bar} (kein ω_{oblique} !)



ROT: ANN, BLAU: TEST SET, SCHWARZ: PFITZNER (OBLIQUE)

Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

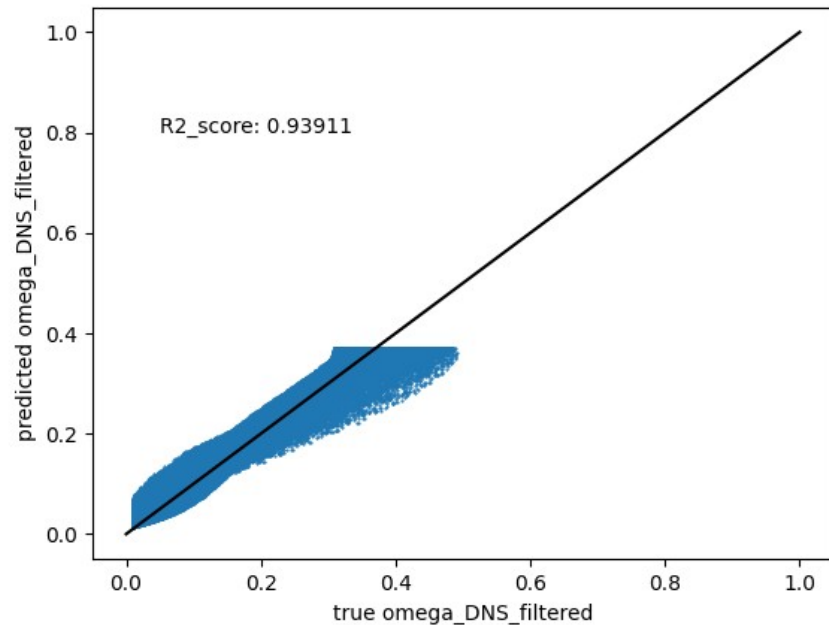
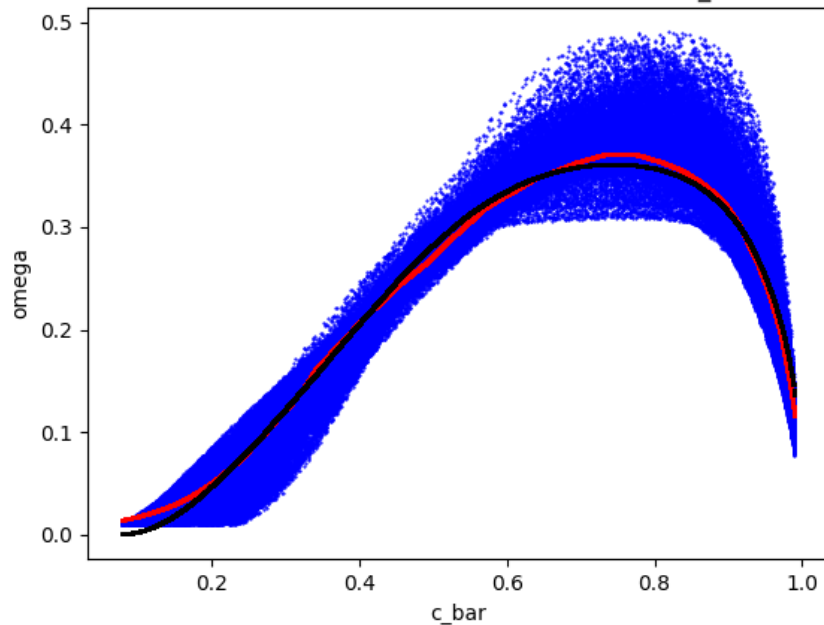


Features: c_{bar} , Delta (kein omega_oblique!)



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

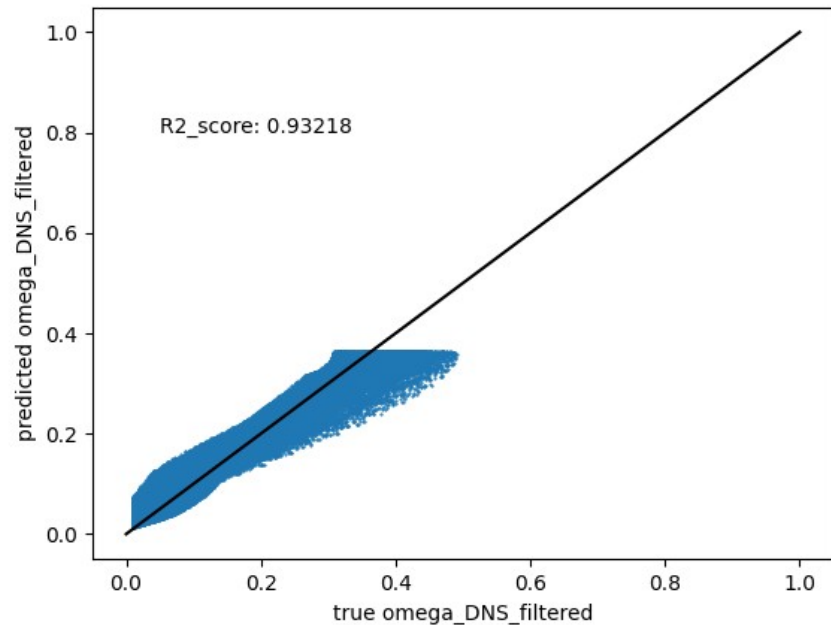
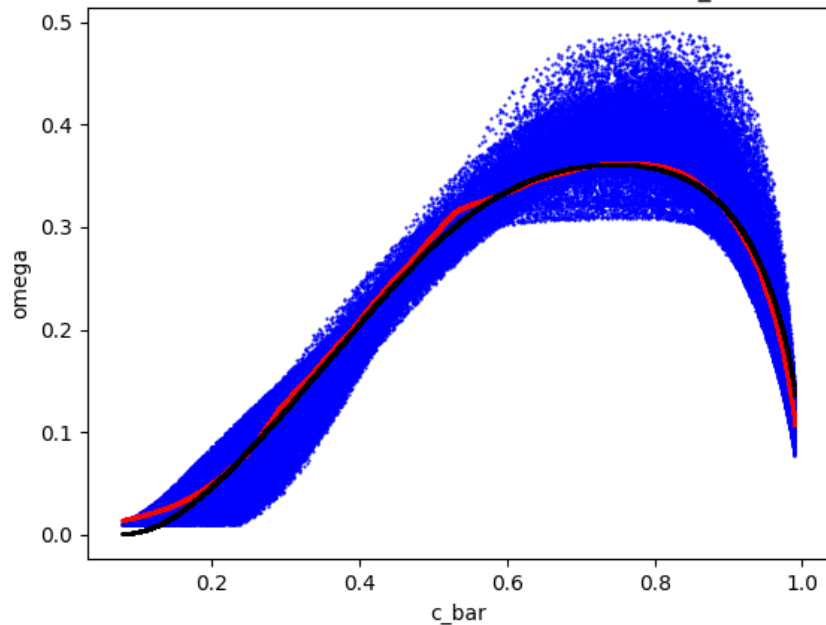


Features: c_{bar} , ω_{oblique}



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

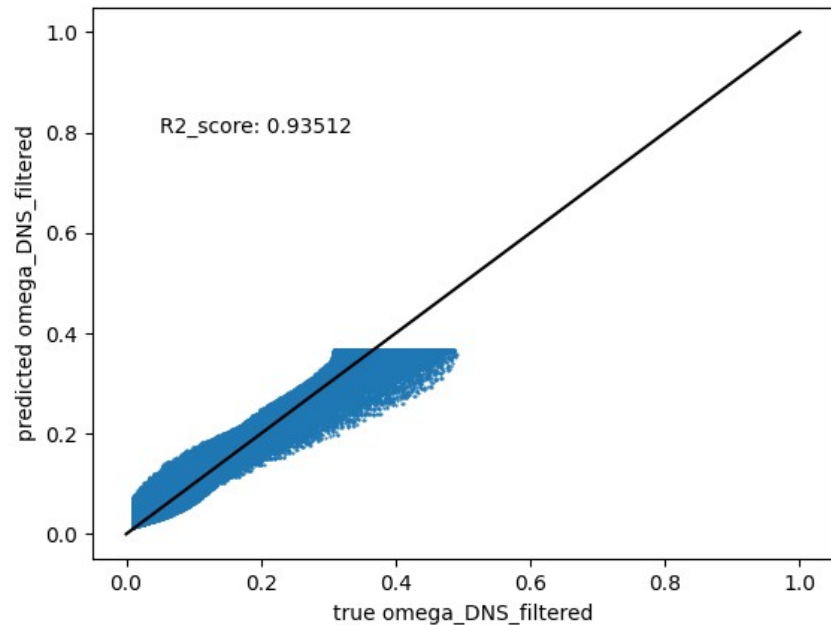
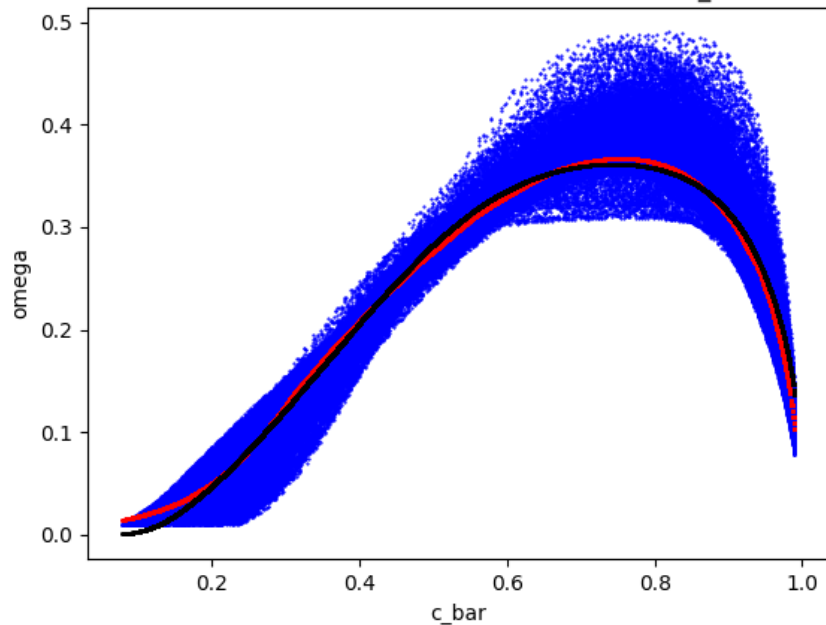


Features: c_{bar} , ω_{oblique} , Δ



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

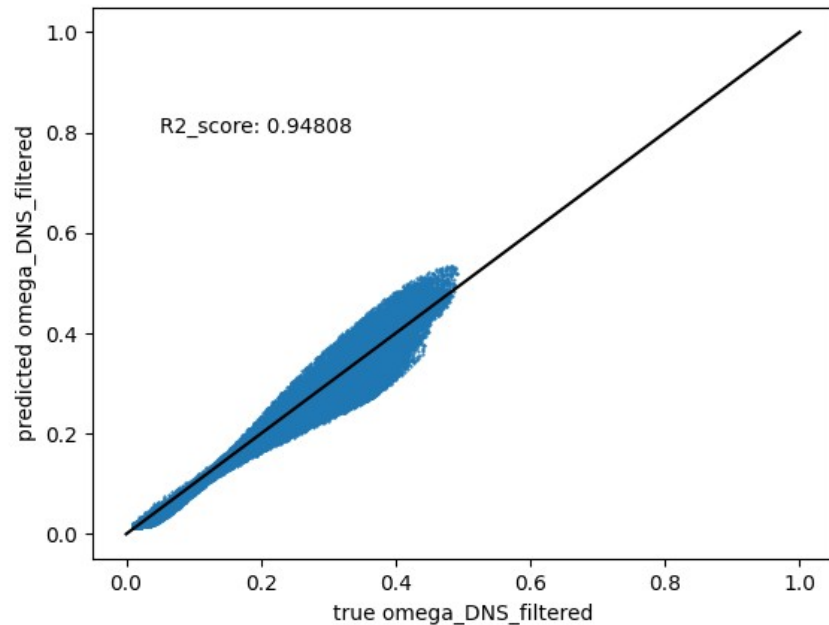
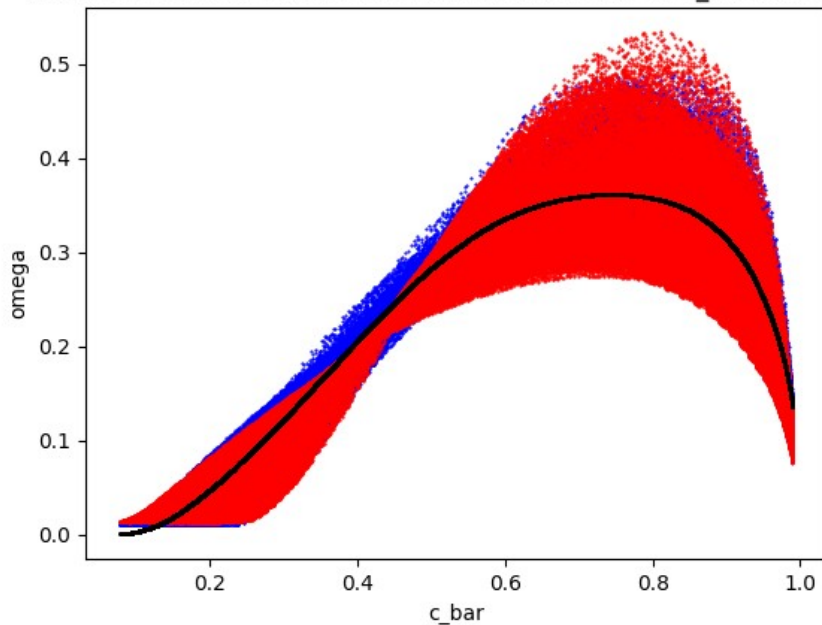


Features: c_{bar} , c_{tilde} (kein $\omega_{\text{oblique!}}$)



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

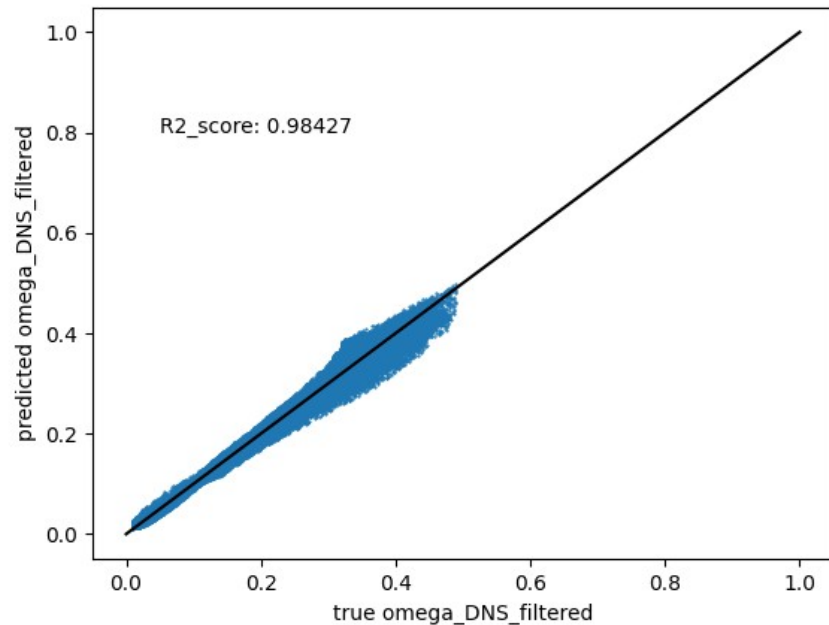
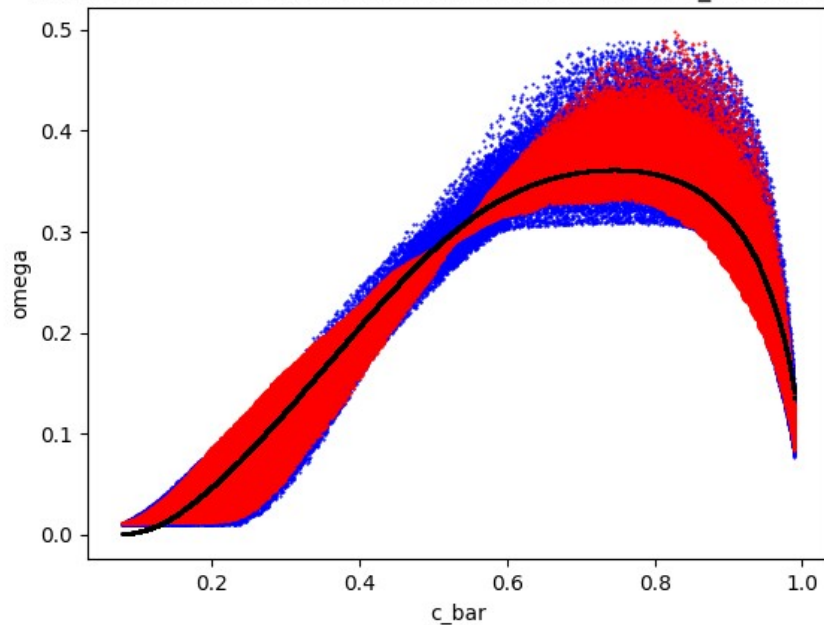


Features: c_{tilde} , c_{bar} , Delta (kein ω_{oblique})



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

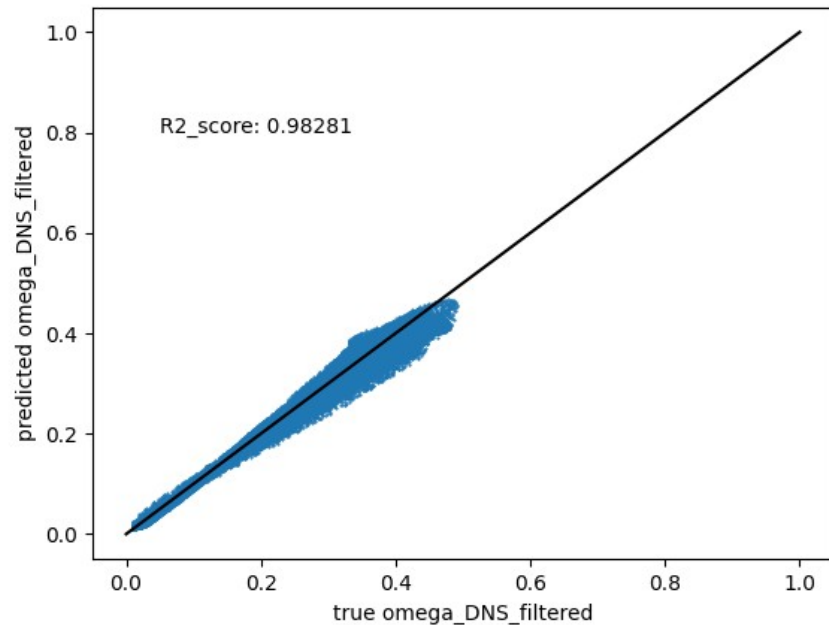
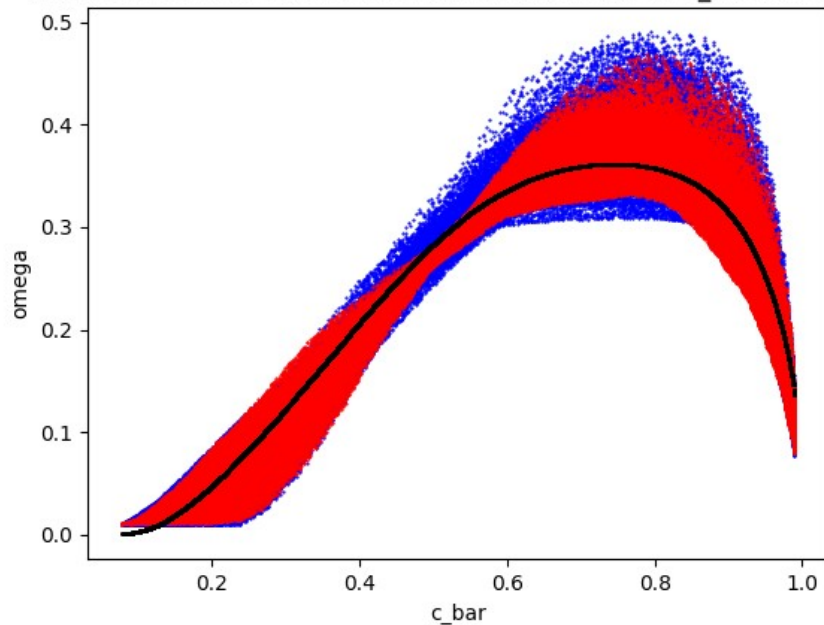


Features: \bar{c} , \tilde{c} , ω_{oblique} , Δ , $|\text{grad}_c|$, $|\text{grad}_{\tilde{c}}|$



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

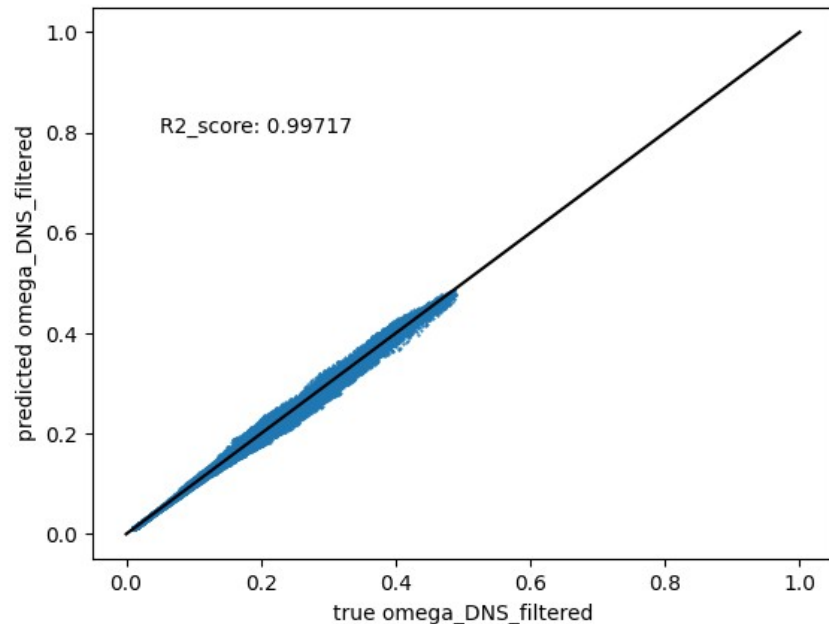
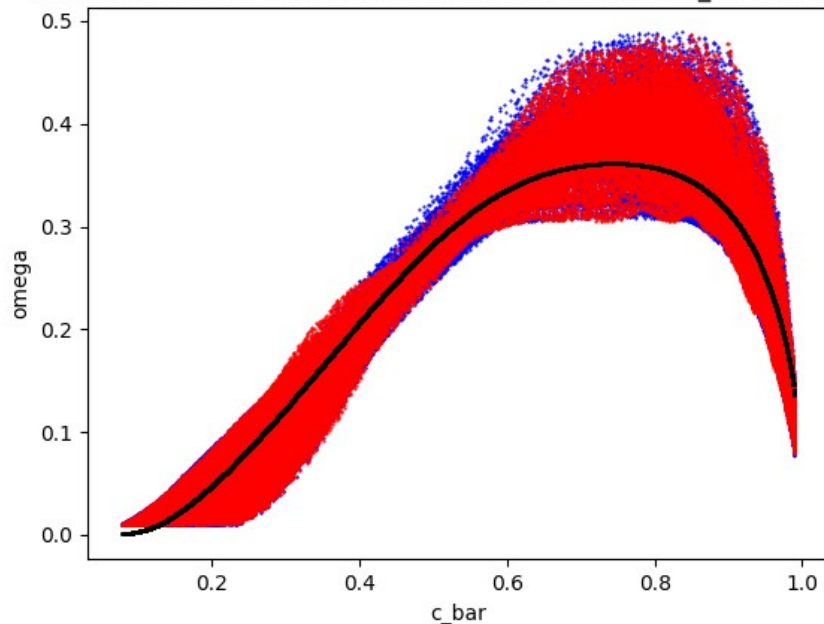


Features: \bar{c} , \tilde{c} , ω_{oblique} , Δ , $|\text{grad}_c|$, $|\text{grad}_c \tilde{c}|$, **c_{prime}**



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20

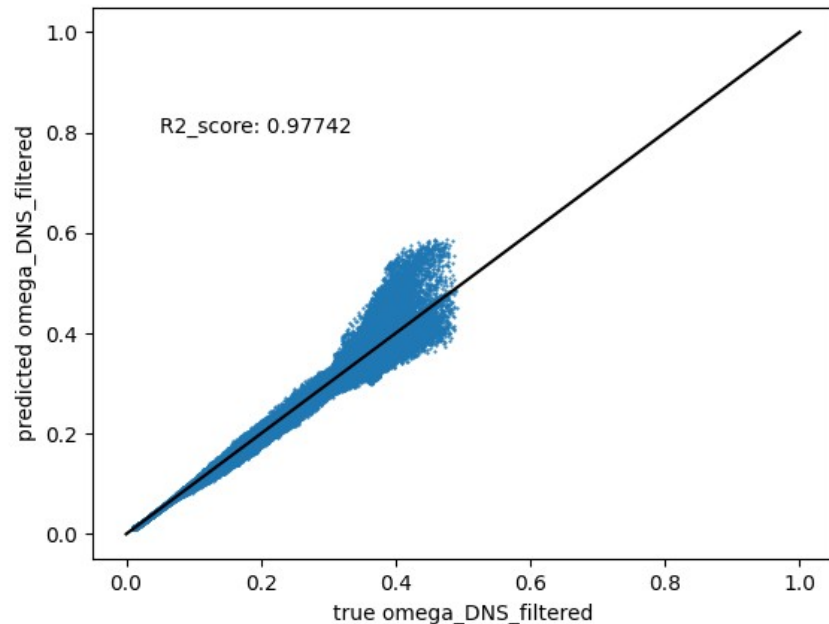
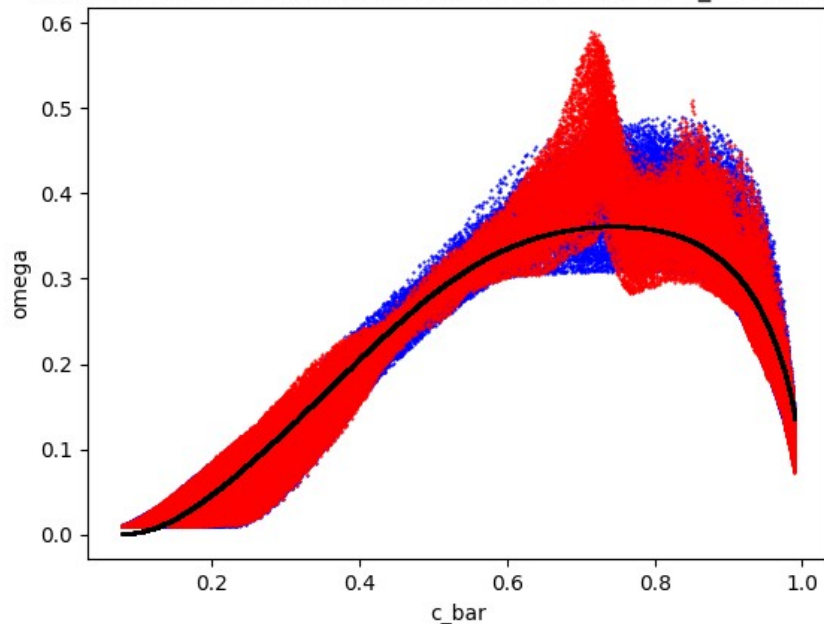


Features: c_{tilde} , ω_{oblique} , Δ ,
 $|\text{grad}_c|$, $|\text{grad}_{c_{\text{tilde}}}|$, c_{prime} (OHNE c_{bar})



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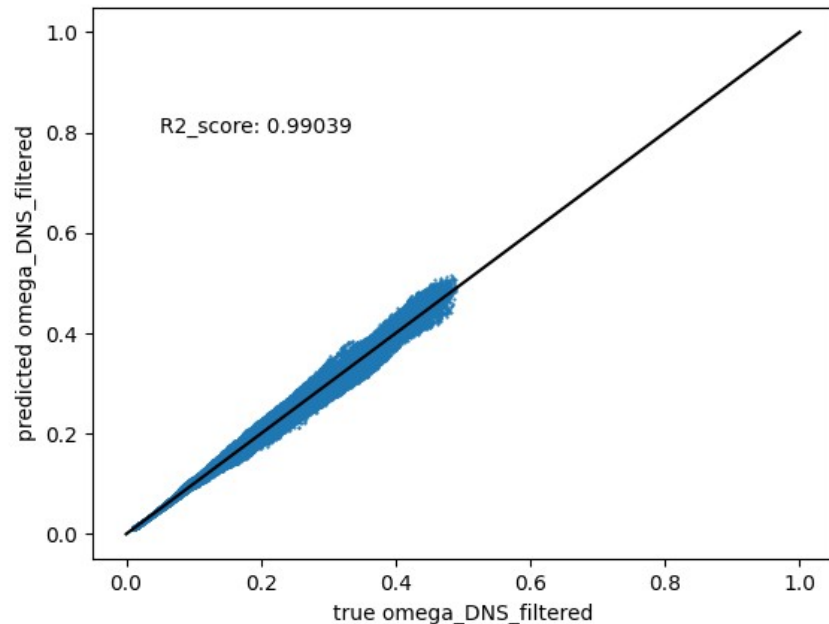
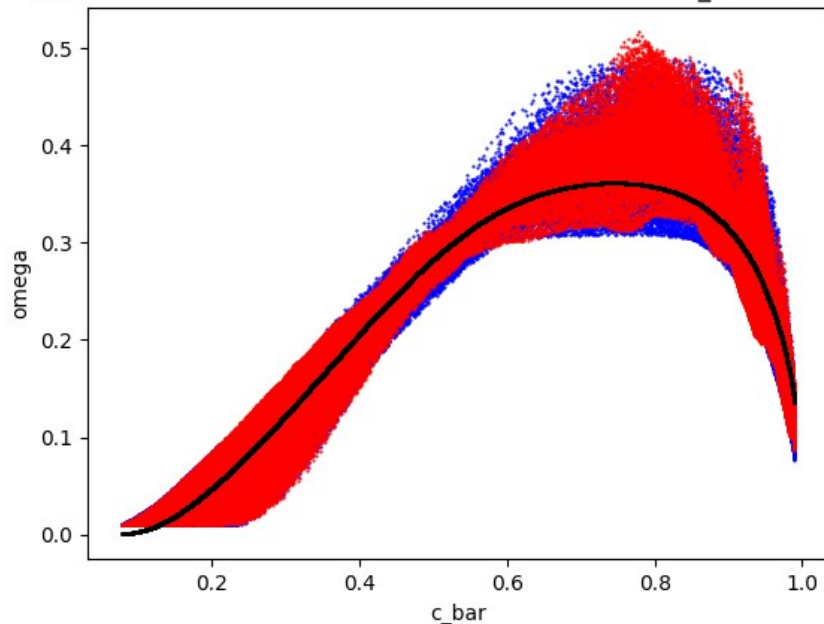


Features: c_{tilde} , c_{bar} , Δ , c_{prime}



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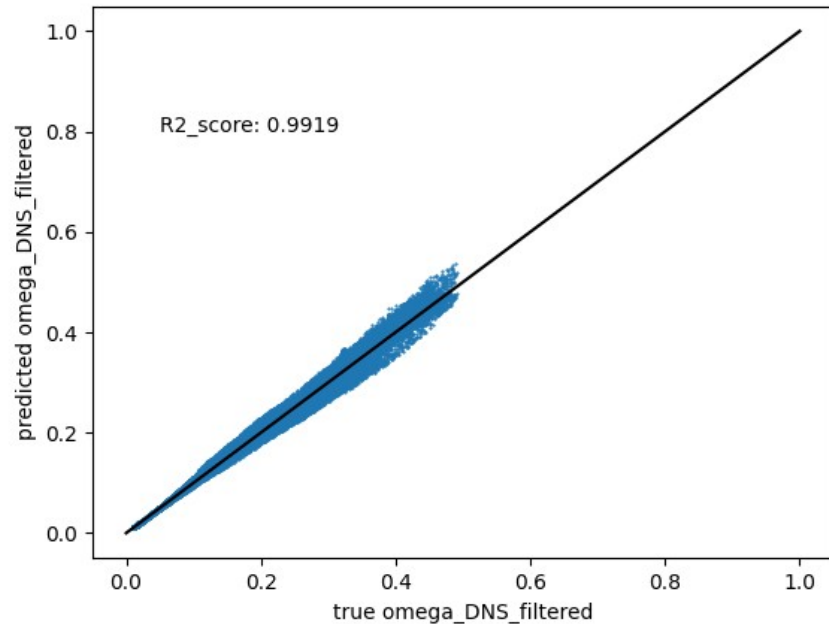
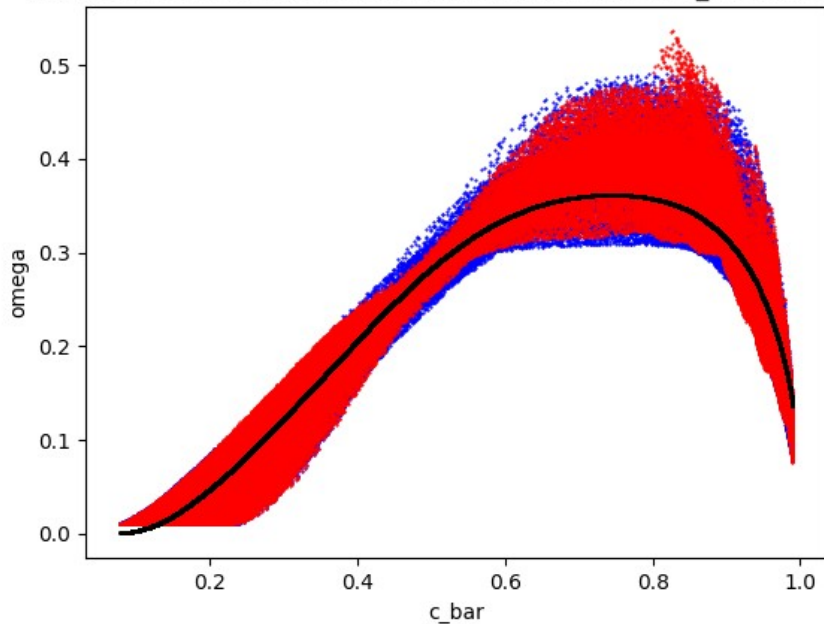


Features: c_{tilde} , c_{bar} , Δ , c_{prime} , ω_{oblique}



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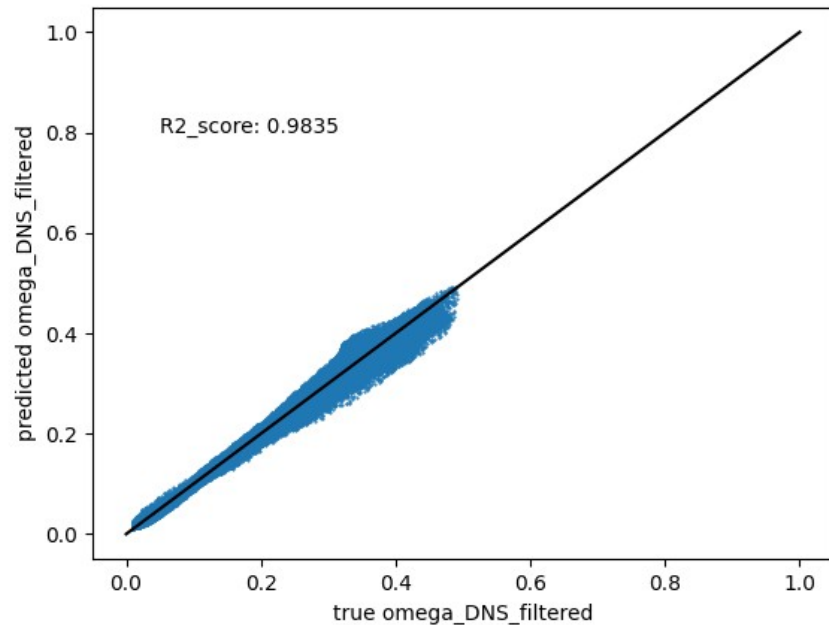
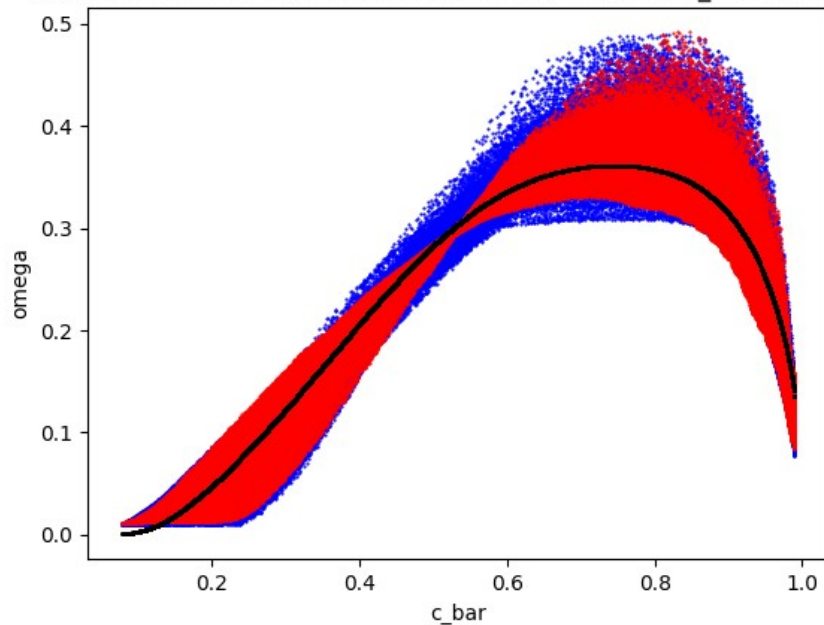


Features: c_{tilde} , c_{bar} , Delta, ω_{oblique}



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Prediction on UPRIME75 with model model for UPRIME_ABC on fw=20





1. Grundsätzlich sollte der R^2 Korrelationskoeffizient überdacht werden. Auch sehr hoch für eher schlechte Vorhersage. (Folie 5-7)
2. Erstaunlich hohe Korrelation nur für c_{bar} und c_{tilde} als einzige Features.
3. ω_{oblique} scheint weniger relevant zu sein als gedacht.
4. c_{prime} verbessert das Ergebniss (eher marginal)
5. c_{bar} , c_{tilde} und Delta liefern bereits eine sehr gute Vorhersage.