表1 基本模型调参参数

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| 模型 | 参数 | Score  (Cross Validation) | Train score  (Train DataSet) |
| Lasso | ‘alpha’:0.001 | 0.11766 | 0.10971 |
| ENet | 'alpha':0.01,  'l1\_ratio':0.1 | 0.11765 | 0.11014 |
| SVR | 'C':1,  'gamma':0.01 | 0.22143 | 0.08947 |
| GBR | 'n\_estimators':500,  'max\_depth':4,  'min\_samples\_split':50,  'min\_samples\_leaf':30 | 0.11817 | 0.08454 |
| RFR | 'n\_estimators':1800,  'max\_depth':5,  'min\_samples\_split':50, 'min\_samples\_leaf':10 | 0.17180 | 0.15322 |
| XGB | 'n\_estimators':2000,  'max\_depth':4,  'min\_child\_weight':3,  'gamma':0.0,  'subsample':0.6,  'colsample\_bytree':0.5,  'reg\_alpha':0.001,  'reg\_lambda':1 | 0.11832 | 0.00253 |
| LGB | 'n\_estimators':200,  'max\_depth':3,  'num\_leaves':5,  'max\_bin':95,  'min\_data\_in\_leaf':5,  'feature\_fraction':0.5,  'bagging\_fraction':0.7,  'bagging\_freq':10,  'lambda\_l1':0.5,  'lambda\_l2':1, | 0.11912 | 0.09097 |

表2 Stacking, Stacking + Averaging

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| Index | Base model  (Stacking model) | Meta model | Averaging | Stacking Score  (CV) | Stacking Train score  (TD) | Pubilc Score |
| 1 | 'Lasso',  'ENet',  'GBR',  ‘RFR’,  'XGB',  'LGB' | 'SVR',  ‘C’=1,  ‘gamma’=0.1 |  | 0.11263 | 0.08835 | 0.11799 |