DeepONet:
100%|████████████| 60/60 [00:07<00:00, 7.83it/s]

Epoch 1/60 | Base: 0.054566 Lap: 0.045053 Edge: 0.049120 | SpecLow: 1.075783 SpecHigh: 2.039485 | Data: 0.410926 Phys: 0.000000 Total: 0.410926 | LR=0.0002 GradNorm=0.730 NegDet=0.000 | Val: Data=0.377334 Phys=0.000000 Total=0.377334 NegDet=0.000 | Sched(Wlow=0.200, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.30) | Time: 8.46s

100%|████████████| 60/60 [00:05<00:00, 11.95it/s]

Epoch 2/60 | Base: 0.045596 Lap: 0.036632 Edge: 0.040857 | SpecLow: 0.828870 SpecHigh: 1.405455 | Data: 0.310568 Phys: 0.000000 Total: 0.310568 | LR=0.0004 GradNorm=0.298 NegDet=0.000 | Val: Data=0.319478 Phys=0.000000 Total=0.319478 NegDet=0.000 | Sched(Wlow=0.199, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.32) | Time: 5.28s

100%|████████████| 60/60 [00:05<00:00, 10.01it/s]

Epoch 3/60 | Base: 0.040015 Lap: 0.034528 Edge: 0.035537 | SpecLow: 0.689550 SpecHigh: 1.253595 | Data: 0.265796 Phys: 0.000000 Total: 0.265796 | LR=0.0006 GradNorm=0.208 NegDet=0.000 | Val: Data=0.301758 Phys=0.000000 Total=0.301758 NegDet=0.000 | Sched(Wlow=0.198, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.34) | Time: 6.27s

100%|████████████| 60/60 [00:05<00:00, 10.33it/s]

Epoch 4/60 | Base: 0.038104 Lap: 0.032344 Edge: 0.033808 | SpecLow: 0.684486 SpecHigh: 1.125659 | Data: 0.253312 Phys: 0.000000 Total: 0.253312 | LR=0.0008 GradNorm=0.132 NegDet=0.000 | Val: Data=0.288900 Phys=0.000000 Total=0.288900 NegDet=0.000 | Sched(Wlow=0.196, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.37) | Time: 6.08s

100%|████████████| 60/60 [00:05<00:00, 10.84it/s]

Epoch 5/60 | Base: 0.036822 Lap: 0.031666 Edge: 0.032607 | SpecLow: 0.652984 SpecHigh: 1.086322 | Data: 0.241780 Phys: 0.000000 Total: 0.241780 | LR=0.001 GradNorm=0.111 NegDet=0.000 | Val: Data=0.285596 Phys=0.000000 Total=0.285596 NegDet=0.000 | Sched(Wlow=0.194, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.40) | Time: 5.81s

100%|████████████| 60/60 [00:06<00:00, 9.54it/s]

Epoch 6/60 | Base: 0.036495 Lap: 0.031043 Edge: 0.032339 | SpecLow: 0.667183 SpecHigh: 1.052332 | Data: 0.240358 Phys: 0.000000 Total: 0.240358 | LR=0.00099925 GradNorm=0.097 NegDet=0.000 | Val: Data=0.275874 Phys=0.000000 Total=0.275874 NegDet=0.000 | Sched(Wlow=0.192, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.45) | Time: 6.52s

100%|████████████| 60/60 [00:06<00:00, 9.32it/s]

Epoch 7/60 | Base: 0.035864 Lap: 0.030786 Edge: 0.031739 | SpecLow: 0.645097 SpecHigh: 1.040276 | Data: 0.232751 Phys: 0.000000 Total: 0.232751 | LR=0.000997 GradNorm=0.073 NegDet=0.000 | Val: Data=0.274701 Phys=0.000000 Total=0.274701 NegDet=0.000 | Sched(Wlow=0.189, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.49) | Time: 6.69s

100%|███████████| 60/60 [00:05<00:00, 10.17it/s]

Epoch 8/60 | Base: 0.035588 Lap: 0.030661 Edge: 0.031478 | SpecLow: 0.639698 SpecHigh: 1.034231 | Data: 0.228939 Phys: 0.000000 Total: 0.228939 | LR=0.00099326 GradNorm=0.065 NegDet=0.000 | Val: Data=0.271264 Phys=0.000000 Total=0.271264 NegDet=0.000 | Sched(Wlow=0.186, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.55) | Time: 6.16s

100%|███████████| 60/60 [00:08<00:00, 7.42it/s]

Epoch 9/60 | Base: 0.035387 Lap: 0.030557 Edge: 0.031289 | SpecLow: 0.633415 SpecHigh: 1.029199 | Data: 0.224920 Phys: 0.000000 Total: 0.224920 | LR=0.00098805 GradNorm=0.058 NegDet=0.000 | Val: Data=0.266184 Phys=0.000000 Total=0.266184 NegDet=0.000 | Sched(Wlow=0.182, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.60) | Time: 8.34s

100%|███████████| 60/60 [00:05<00:00, 10.36it/s]

Epoch 10/60 | Base: 0.035238 Lap: 0.030512 Edge: 0.031147 | SpecLow: 0.626860 SpecHigh: 1.027066 | Data: 0.220927 Phys: 0.000000 Total: 0.220927 | LR=0.00098137 GradNorm=0.050 NegDet=0.000 | Val: Data=0.262165 Phys=0.000000 Total=0.262165 NegDet=0.000 | Sched(Wlow=0.178, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.66) | Time: 6.08s

100%|███████████| 60/60 [00:04<00:00, 12.77it/s]

Epoch 11/60 | Base: 0.035069 Lap: 0.030507 Edge: 0.030983 | SpecLow: 0.620277 SpecHigh: 1.026982 | Data: 0.216887 Phys: 0.000000 Total: 0.216887 | LR=0.00097325 GradNorm=0.046 NegDet=0.000 | Val: Data=0.259713 Phys=0.000000 Total=0.259713 NegDet=0.000 | Sched(Wlow=0.174, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.71) | Time: 4.92s

100%|███████████| 60/60 [00:05<00:00, 11.67it/s]

Epoch 12/60 | Base: 0.034929 Lap: 0.030526 Edge: 0.030846 | SpecLow: 0.610409 SpecHigh: 1.027909 | Data: 0.212264 Phys: 0.000000 Total: 0.212264 | LR=0.00096372 GradNorm=0.044 NegDet=0.000 | Val: Data=0.253418 Phys=0.000000 Total=0.253418 NegDet=0.000 | Sched(Wlow=0.169, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.76) | Time: 5.40s

100%|███████████| 60/60 [00:05<00:00, 11.91it/s]

Epoch 13/60 | Base: 0.034717 Lap: 0.030599 Edge: 0.030634 | SpecLow: 0.597212 SpecHigh: 1.031704 | Data: 0.207116 Phys: 0.000000 Total: 0.207116 | LR=0.0009528 GradNorm=0.040 NegDet=0.000 | Val: Data=0.250168 Phys=0.000000 Total=0.250168 NegDet=0.000 |

Sched(Wlow=0.165, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.82) | Time: 5.32s

100%|███████████| 60/60 [00:05<00:00, 10.46it/s]

Epoch 14/60 | Base: 0.034478 Lap: 0.030729 Edge: 0.030390 | SpecLow: 0.581505 SpecHigh: 1.038473 | Data: 0.201712 Phys: 0.000000 Total: 0.201712 | LR=0.00094054 GradNorm=0.039 NegDet=0.000 | Val: Data=0.243602 Phys=0.000000 Total=0.243602 NegDet=0.000 | Sched(Wlow=0.159, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.86) | Time: 6.01s

100%|███████████| 60/60 [00:05<00:00, 10.46it/s]

Epoch 15/60 | Base: 0.034114 Lap: 0.030932 Edge: 0.030017 | SpecLow: 0.558373 SpecHigh: 1.050237 | Data: 0.195369 Phys: 0.000000 Total: 0.195369 | LR=0.00092698 GradNorm=0.040 NegDet=0.000 | Val: Data=0.238725 Phys=0.000000 Total=0.238725 NegDet=0.000 | Sched(Wlow=0.154, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.90) | Time: 6.01s
Checkpoint saved at epoch 15 (25% complete)

100%|███████████| 60/60 [00:05<00:00, 10.43it/s]

Epoch 16/60 | Base: 0.033661 Lap: 0.031173 Edge: 0.029543 | SpecLow: 0.524793 SpecHigh: 1.065884 | Data: 0.187755 Phys: 0.000000 Total: 0.187755 | LR=0.00091215 GradNorm=0.045 NegDet=0.000 | Val: Data=0.232863 Phys=0.000000 Total=0.232863 NegDet=0.000 | Sched(Wlow=0.149, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.94) | Time: 6.00s

100%|███████████| 60/60 [00:04<00:00, 12.75it/s]

Epoch 17/60 | Base: 0.033119 Lap: 0.031311 Edge: 0.028984 | SpecLow: 0.483615 SpecHigh: 1.078919 | Data: 0.179070 Phys: 0.000000 Total: 0.179070 | LR=0.00089611 GradNorm=0.064 NegDet=0.000 | Val: Data=0.226922 Phys=0.000000 Total=0.226922 NegDet=0.000 | Sched(Wlow=0.143, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.97) | Time: 4.98s

100%|███████████| 60/60 [00:05<00:00, 10.72it/s]

Epoch 18/60 | Base: 0.032851 Lap: 0.031273 Edge: 0.028717 | SpecLow: 0.446012 SpecHigh: 1.080395 | Data: 0.170900 Phys: 0.000000 Total: 0.170900 | LR=0.0008789 GradNorm=0.102 NegDet=0.000 | Val: Data=0.219787 Phys=0.000000 Total=0.219787 NegDet=0.000 | Sched(Wlow=0.137, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.99) | Time: 5.87s

100%|███████████| 60/60 [00:04<00:00, 13.40it/s]

Epoch 19/60 | Base: 0.033131 Lap: 0.031147 Edge: 0.029014 | SpecLow: 0.417551 SpecHigh: 1.072766 | Data: 0.164436 Phys: 0.000000 Total: 0.164436 | LR=0.00086059 GradNorm=0.150 NegDet=0.000 | Val: Data=0.215708 Phys=0.000000 Total=0.215708 NegDet=0.000 | Sched(Wlow=0.131, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 4.77s

100%|████████████| 60/60 [00:04<00:00, 13.68it/s]

Epoch 20/60 | Base: 0.033530 Lap: 0.031000 Edge: 0.029439 | SpecLow: 0.404498 SpecHigh: 1.061842 | Data: 0.160166 Phys: 0.000000 Total: 0.160166 | LR=0.00084124 GradNorm=0.172 NegDet=0.000 | Val: Data=0.209951 Phys=0.000000 Total=0.209951 NegDet=0.000 | Sched(Wlow=0.126, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 4.65s

100%|████████████| 60/60 [00:04<00:00, 12.77it/s]

Epoch 21/60 | Base: 0.032910 Lap: 0.030697 Edge: 0.028853 | SpecLow: 0.400958 SpecHigh: 1.047292 | Data: 0.155693 Phys: 0.000000 Total: 0.155693 | LR=0.0008209 GradNorm=0.143 NegDet=0.000 | Val: Data=0.204633 Phys=0.000000 Total=0.204633 NegDet=0.000 | Sched(Wlow=0.120, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 4.95s

100%|████████████| 60/60 [00:05<00:00, 11.40it/s]

Epoch 22/60 | Base: 0.032263 Lap: 0.030478 Edge: 0.028230 | SpecLow: 0.391406 SpecHigh: 1.037807 | Data: 0.150877 Phys: 0.000000 Total: 0.150877 | LR=0.00079964 GradNorm=0.121 NegDet=0.000 | Val: Data=0.199460 Phys=0.000000 Total=0.199460 NegDet=0.000 | Sched(Wlow=0.114, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 5.53s

100%|████████████| 60/60 [00:06<00:00, 9.18it/s]

Epoch 23/60 | Base: 0.031746 Lap: 0.030356 Edge: 0.027730 | SpecLow: 0.386252 SpecHigh: 1.032280 | Data: 0.147087 Phys: 0.000000 Total: 0.147087 | LR=0.00077754 GradNorm=0.102 NegDet=0.000 | Val: Data=0.195284 Phys=0.000000 Total=0.195284 NegDet=0.000 | Sched(Wlow=0.108, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 6.77s

100%|████████████| 60/60 [00:04<00:00, 12.78it/s]

Epoch 24/60 | Base: 0.031408 Lap: 0.030241 Edge: 0.027406 | SpecLow: 0.378053 SpecHigh: 1.027297 | Data: 0.143335 Phys: 0.000000 Total: 0.143335 | LR=0.00075467 GradNorm=0.089 NegDet=0.000 | Val: Data=0.189527 Phys=0.000000 Total=0.189527 NegDet=0.000 | Sched(Wlow=0.102, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 4.95s

100%|████████████| 60/60 [00:05<00:00, 10.34it/s]

Epoch 25/60 | Base: 0.031037 Lap: 0.030166 Edge: 0.027046 | SpecLow: 0.374020 SpecHigh: 1.024233 | Data: 0.140213 Phys: 0.000000 Total: 0.140213 | LR=0.00073109 GradNorm=0.076 NegDet=0.000 | Val: Data=0.185820 Phys=0.000000 Total=0.185820 NegDet=0.000 | Sched(Wlow=0.097, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 6.06s

100%|████████████| 60/60 [00:04<00:00, 12.70it/s]

Epoch 26/60 | Base: 0.030803 Lap: 0.030115 Edge: 0.026820 | SpecLow: 0.369066 SpecHigh: 1.022130 | Data: 0.137341 Phys: 0.000000 Total: 0.137341 | LR=0.00070689 GradNorm=0.066

NegDet=0.000 | Val: Data=0.180935 Phys=0.000000 Total=0.180935 NegDet=0.000 |
Sched(Wlow=0.092, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10,
Wphys=1.00) | Time: 5.00s

100%|████████████| 60/60 [00:04<00:00, 12.92it/s]

Epoch 27/60 | Base: 0.030597 Lap: 0.030068 Edge: 0.026620 | SpecLow: 0.363634 SpecHigh:
1.020337 | Data: 0.134609 Phys: 0.000000 Total: 0.134609 | LR=0.00068215 GradNorm=0.057
NegDet=0.000 | Val: Data=0.177159 Phys=0.000000 Total=0.177159 NegDet=0.000 |
Sched(Wlow=0.086, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.11,
Wphys=1.00) | Time: 4.90s

100%|████████████| 60/60 [00:05<00:00, 11.32it/s]

Epoch 28/60 | Base: 0.030413 Lap: 0.030029 Edge: 0.026442 | SpecLow: 0.359741 SpecHigh:
1.018843 | Data: 0.132188 Phys: 0.000000 Total: 0.132188 | LR=0.00065694 GradNorm=0.044
NegDet=0.000 | Val: Data=0.173279 Phys=0.000000 Total=0.173279 NegDet=0.000 |
Sched(Wlow=0.082, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.11,
Wphys=1.00) | Time: 5.55s

100%|████████████| 60/60 [00:07<00:00, 8.12it/s]

Epoch 29/60 | Base: 0.030272 Lap: 0.030009 Edge: 0.026305 | SpecLow: 0.355056 SpecHigh:
1.018059 | Data: 0.129938 Phys: 0.000000 Total: 0.129938 | LR=0.00063135 GradNorm=0.038
NegDet=0.000 | Val: Data=0.169951 Phys=0.000000 Total=0.169951 NegDet=0.000 |
Sched(Wlow=0.077, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.12,
Wphys=1.00) | Time: 7.63s

100%|████████████| 60/60 [00:05<00:00, 11.53it/s]

Epoch 30/60 | Base: 0.030157 Lap: 0.029993 Edge: 0.026194 | SpecLow: 0.351052 SpecHigh:
1.017465 | Data: 0.127927 Phys: 0.000000 Total: 0.127927 | LR=0.00060546 GradNorm=0.031
NegDet=0.000 | Val: Data=0.166426 Phys=0.000000 Total=0.166426 NegDet=0.000 |
Sched(Wlow=0.073, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.13,
Wphys=1.00) | Time: 5.43s
Checkpoint saved at epoch 30 (50% complete)

100%|████████████| 60/60 [00:05<00:00, 11.65it/s]

Epoch 31/60 | Base: 0.030077 Lap: 0.029981 Edge: 0.026113 | SpecLow: 0.347744 SpecHigh:
1.017041 | Data: 0.127254 Phys: 0.000000 Total: 0.127254 | LR=0.00057936 GradNorm=0.027
NegDet=0.000 | Val: Data=0.164404 Phys=0.000000 Total=0.164404 NegDet=0.000 |
Sched(Wlow=0.069, Whigh=0.061, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.14,
Wphys=1.00) | Time: 5.38s

100%|████████████| 60/60 [00:04<00:00, 13.31it/s]

Epoch 32/60 | Base: 0.030027 Lap: 0.029964 Edge: 0.026051 | SpecLow: 0.345080 SpecHigh:
1.016560 | Data: 0.128970 Phys: 0.000000 Total: 0.128970 | LR=0.00055314 GradNorm=0.021
NegDet=0.000 | Val: Data=0.164839 Phys=0.000000 Total=0.164839 NegDet=0.000 |
Sched(Wlow=0.065, Whigh=0.064, pH=1.22, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.15,
Wphys=1.00) | Time: 4.76s

100%|████████████| 60/60 [00:04<00:00, 13.20it/s]

Epoch 33/60 | Base: 0.029984 Lap: 0.029947 Edge: 0.025989 | SpecLow: 0.342475 SpecHigh: 1.016241 | Data: 0.132987 Phys: 0.000000 Total: 0.132987 | LR=0.00052686 GradNorm=0.019 NegDet=0.000 | Val: Data=0.167741 Phys=0.000000 Total=0.167741 NegDet=0.000 | Sched(Wlow=0.062, Whigh=0.070, pH=1.24, Wg=0.61, Wlap=0.20, Wedge=0.20, ROI=0.17, Wphys=1.00) | Time: 4.82s

100%|████████████| 60/60 [00:04<00:00, 13.34it/s]

Epoch 34/60 | Base: 0.029973 Lap: 0.029930 Edge: 0.025950 | SpecLow: 0.340436 SpecHigh: 1.015950 | Data: 0.139298 Phys: 0.000000 Total: 0.139298 | LR=0.00050064 GradNorm=0.019 NegDet=0.000 | Val: Data=0.172993 Phys=0.000000 Total=0.172993 NegDet=0.000 | Sched(Wlow=0.059, Whigh=0.077, pH=1.28, Wg=0.61, Wlap=0.20, Wedge=0.20, ROI=0.18, Wphys=1.00) | Time: 4.75s

100%|████████████| 60/60 [00:04<00:00, 12.44it/s]

Epoch 35/60 | Base: 0.029985 Lap: 0.029912 Edge: 0.025924 | SpecLow: 0.339414 SpecHigh: 1.015539 | Data: 0.147820 Phys: 0.000000 Total: 0.147820 | LR=0.00047454 GradNorm=0.021 NegDet=0.000 | Val: Data=0.180539 Phys=0.000000 Total=0.180539 NegDet=0.000 | Sched(Wlow=0.056, Whigh=0.086, pH=1.32, Wg=0.62, Wlap=0.21, Wedge=0.20, ROI=0.20, Wphys=1.00) | Time: 5.10s

100%|████████████| 60/60 [00:06<00:00, 8.61it/s]

Epoch 36/60 | Base: 0.029994 Lap: 0.029882 Edge: 0.025889 | SpecLow: 0.337430 SpecHigh: 1.014879 | Data: 0.158288 Phys: 0.000000 Total: 0.158288 | LR=0.00044865 GradNorm=0.020 NegDet=0.000 | Val: Data=0.190355 Phys=0.000000 Total=0.190355 NegDet=0.000 | Sched(Wlow=0.054, Whigh=0.097, pH=1.37, Wg=0.62, Wlap=0.21, Wedge=0.20, ROI=0.21, Wphys=1.00) | Time: 7.26s
Early stopping at epoch 36

PINN:
100%|████████████| 60/60 [00:19<00:00, 3.07it/s]

Epoch 1/60 | Base: 0.159118 Lap: 0.355874 Edge: 0.137300 | SpecLow: 3.610861 SpecHigh: 313.412206 | Data: 19.785622 Phys: 0.000000 Total: 19.785622 | LR=0.0002 GradNorm=255.391 NegDet=0.000 | Val: Data=4.640830 Phys=0.000000 Total=4.640830 NegDet=0.000 | Sched(Wlow=0.200, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.30) | Time: 20.80s

100%|████████████| 60/60 [00:18<00:00, 3.19it/s]

Epoch 2/60 | Base: 0.113818 Lap: 0.172062 Edge: 0.102356 | SpecLow: 1.329519 SpecHigh: 50.664782 | Data: 3.474947 Phys: 0.000000 Total: 3.474947 | LR=0.0004 GradNorm=34.685 NegDet=0.000 | Val: Data=2.853955 Phys=0.000000 Total=2.853955 NegDet=0.000 | Sched(Wlow=0.199, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.32) | Time: 19.39s

100%|████████████| 60/60 [00:18<00:00, 3.20it/s]

Epoch 3/60 | Base: 0.101594 Lap: 0.139764 Edge: 0.091793 | SpecLow: 1.141837 SpecHigh: 33.763657 | Data: 2.401057 Phys: 0.000000 Total: 2.401057 | LR=0.0006 GradNorm=19.546 NegDet=0.000 | Val: Data=1.936450 Phys=0.000000 Total=1.936450 NegDet=0.000 | Sched(Wlow=0.198, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.34) | Time: 19.33s

100%|████████████| 60/60 [00:18<00:00, 3.19it/s]

Epoch 4/60 | Base: 0.087295 Lap: 0.119567 Edge: 0.079058 | SpecLow: 0.999558 SpecHigh: 21.713973 | Data: 1.627190 Phys: 0.000000 Total: 1.627190 | LR=0.0008 GradNorm=9.390 NegDet=0.000 | Val: Data=1.331469 Phys=0.000000 Total=1.331469 NegDet=0.000 | Sched(Wlow=0.196, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.37) | Time: 19.36s

100%|████████████| 60/60 [00:18<00:00, 3.21it/s]

Epoch 5/60 | Base: 0.076371 Lap: 0.102202 Edge: 0.069252 | SpecLow: 0.832455 SpecHigh: 14.176904 | Data: 1.123888 Phys: 0.000000 Total: 1.123888 | LR=0.001 GradNorm=5.483 NegDet=0.000 | Val: Data=0.906593 Phys=0.000000 Total=0.906593 NegDet=0.000 | Sched(Wlow=0.194, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.40) | Time: 19.21s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 6/60 | Base: 0.059247 Lap: 0.090167 Edge: 0.053049 | SpecLow: 0.719227 SpecHigh: 9.426896 | Data: 0.791913 Phys: 0.000000 Total: 0.791913 | LR=0.00099925 GradNorm=3.222 NegDet=0.000 | Val: Data=0.680030 Phys=0.000000 Total=0.680030 NegDet=0.000 | Sched(Wlow=0.192, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.45) | Time: 19.14s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 7/60 | Base: 0.045588 Lap: 0.079829 Edge: 0.039982 | SpecLow: 0.585496 SpecHigh: 6.980217 | Data: 0.599158 Phys: 0.000000 Total: 0.599158 | LR=0.000997 GradNorm=2.390 NegDet=0.000 | Val: Data=0.519326 Phys=0.000000 Total=0.519326 NegDet=0.000 | Sched(Wlow=0.189, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.49) | Time: 19.19s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 8/60 | Base: 0.039418 Lap: 0.070352 Edge: 0.034278 | SpecLow: 0.430550 SpecHigh: 5.335244 | Data: 0.460518 Phys: 0.000000 Total: 0.460518 | LR=0.00099326 GradNorm=1.713 NegDet=0.000 | Val: Data=0.398804 Phys=0.000000 Total=0.398804 NegDet=0.000 | Sched(Wlow=0.186, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.55) | Time: 19.17s

100%|████████████| 60/60 [00:18<00:00, 3.24it/s]

Epoch 9/60 | Base: 0.035734 Lap: 0.064379 Edge: 0.030936 | SpecLow: 0.296150 SpecHigh: 4.211337 | Data: 0.361488 Phys: 0.000000 Total: 0.361488 | LR=0.00098805 GradNorm=1.457 NegDet=0.000 | Val: Data=0.322163 Phys=0.000000 Total=0.322163 NegDet=0.000 | Sched(Wlow=0.182, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.60) | Time: 19.03s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 10/60 | Base: 0.034105 Lap: 0.057636 Edge: 0.029550 | SpecLow: 0.254357 SpecHigh: 3.236343 | Data: 0.291115 Phys: 0.000000 Total: 0.291115 | LR=0.00098137 GradNorm=1.167 NegDet=0.000 | Val: Data=0.260446 Phys=0.000000 Total=0.260446 NegDet=0.000 | Sched(Wlow=0.178, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.66) | Time: 19.17s

100%|████████████| 60/60 [00:18<00:00, 3.21it/s]

Epoch 11/60 | Base: 0.033839 Lap: 0.051318 Edge: 0.029449 | SpecLow: 0.249387 SpecHigh: 2.420519 | Data: 0.238672 Phys: 0.000000 Total: 0.238672 | LR=0.00097325 GradNorm=0.940 NegDet=0.000 | Val: Data=0.214540 Phys=0.000000 Total=0.214540 NegDet=0.000 | Sched(Wlow=0.174, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.71) | Time: 19.25s

100%|████████████| 60/60 [00:18<00:00, 3.20it/s]

Epoch 12/60 | Base: 0.031626 Lap: 0.046685 Edge: 0.027375 | SpecLow: 0.224430 SpecHigh: 1.888171 | Data: 0.197788 Phys: 0.000000 Total: 0.197788 | LR=0.00096372 GradNorm=0.695 NegDet=0.000 | Val: Data=0.184783 Phys=0.000000 Total=0.184783 NegDet=0.000 | Sched(Wlow=0.169, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.76) | Time: 19.32s

100%|████████████| 60/60 [00:18<00:00, 3.19it/s]

Epoch 13/60 | Base: 0.029192 Lap: 0.043857 Edge: 0.025076 | SpecLow: 0.203530 SpecHigh: 1.631395 | Data: 0.174370 Phys: 0.000000 Total: 0.174370 | LR=0.0009528 GradNorm=0.505 NegDet=0.000 | Val: Data=0.167200 Phys=0.000000 Total=0.167200 NegDet=0.000 |

Sched(Wlow=0.165, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.82) | Time: 19.33s

100%|████████████| 60/60 [00:18<00:00, 3.21it/s]

Epoch 14/60 | Base: 0.027925 Lap: 0.042040 Edge: 0.023915 | SpecLow: 0.195915 SpecHigh: 1.493423 | Data: 0.161968 Phys: 0.000000 Total: 0.161968 | LR=0.00094054 GradNorm=0.529 NegDet=0.000 | Val: Data=0.157805 Phys=0.000000 Total=0.157805 NegDet=0.000 | Sched(Wlow=0.159, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.86) | Time: 19.20s

100%|████████████| 60/60 [00:18<00:00, 3.17it/s]

Epoch 15/60 | Base: 0.026775 Lap: 0.040872 Edge: 0.022848 | SpecLow: 0.183796 SpecHigh: 1.403736 | Data: 0.152076 Phys: 0.000000 Total: 0.152076 | LR=0.00092698 GradNorm=0.450 NegDet=0.000 | Val: Data=0.151026 Phys=0.000000 Total=0.151026 NegDet=0.000 | Sched(Wlow=0.154, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.90) | Time: 19.51s
Checkpoint saved at epoch 15 (25% complete)

100%|████████████| 60/60 [00:18<00:00, 3.24it/s]

Epoch 16/60 | Base: 0.026086 Lap: 0.039766 Edge: 0.022213 | SpecLow: 0.174133 SpecHigh: 1.343048 | Data: 0.144950 Phys: 0.000000 Total: 0.144950 | LR=0.00091215 GradNorm=0.383 NegDet=0.000 | Val: Data=0.142289 Phys=0.000000 Total=0.142289 NegDet=0.000 | Sched(Wlow=0.149, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.94) | Time: 19.10s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 17/60 | Base: 0.025585 Lap: 0.039004 Edge: 0.021759 | SpecLow: 0.166488 SpecHigh: 1.295050 | Data: 0.139252 Phys: 0.000000 Total: 0.139252 | LR=0.00089611 GradNorm=0.357 NegDet=0.000 | Val: Data=0.137445 Phys=0.000000 Total=0.137445 NegDet=0.000 | Sched(Wlow=0.143, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.97) | Time: 19.21s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 18/60 | Base: 0.025602 Lap: 0.038521 Edge: 0.021806 | SpecLow: 0.166821 SpecHigh: 1.262157 | Data: 0.136299 Phys: 0.000000 Total: 0.136299 | LR=0.0008789 GradNorm=0.473 NegDet=0.000 | Val: Data=0.136274 Phys=0.000000 Total=0.136274 NegDet=0.000 | Sched(Wlow=0.137, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=0.99) | Time: 19.22s

100%|████████████| 60/60 [00:18<00:00, 3.18it/s]

Epoch 19/60 | Base: 0.024804 Lap: 0.038195 Edge: 0.021048 | SpecLow: 0.155272 SpecHigh: 1.235048 | Data: 0.131167 Phys: 0.000000 Total: 0.131167 | LR=0.00086059 GradNorm=0.352 NegDet=0.000 | Val: Data=0.130391 Phys=0.000000 Total=0.130391 NegDet=0.000 | Sched(Wlow=0.131, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.39s

100%|████████████| 60/60 [00:18<00:00, 3.20it/s]

Epoch 20/60 | Base: 0.024310 Lap: 0.037770 Edge: 0.020592 | SpecLow: 0.147395 SpecHigh: 1.206057 | Data: 0.126858 Phys: 0.000000 Total: 0.126858 | LR=0.00084124 GradNorm=0.301 NegDet=0.000 | Val: Data=0.127054 Phys=0.000000 Total=0.127054 NegDet=0.000 | Sched(Wlow=0.126, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.29s

100%|████████████| 60/60 [00:18<00:00, 3.21it/s]

Epoch 21/60 | Base: 0.024180 Lap: 0.037149 Edge: 0.020491 | SpecLow: 0.147662 SpecHigh: 1.179193 | Data: 0.124140 Phys: 0.000000 Total: 0.124140 | LR=0.0008209 GradNorm=0.269 NegDet=0.000 | Val: Data=0.124198 Phys=0.000000 Total=0.124198 NegDet=0.000 | Sched(Wlow=0.120, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.22s

100%|████████████| 60/60 [00:19<00:00, 3.13it/s]

Epoch 22/60 | Base: 0.024011 Lap: 0.036888 Edge: 0.020348 | SpecLow: 0.146954 SpecHigh: 1.161850 | Data: 0.121910 Phys: 0.000000 Total: 0.121910 | LR=0.00079964 GradNorm=0.287 NegDet=0.000 | Val: Data=0.121162 Phys=0.000000 Total=0.121162 NegDet=0.000 | Sched(Wlow=0.114, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.76s

100%|████████████| 60/60 [00:18<00:00, 3.23it/s]

Epoch 23/60 | Base: 0.023786 Lap: 0.036706 Edge: 0.020151 | SpecLow: 0.140382 SpecHigh: 1.145006 | Data: 0.119043 Phys: 0.000000 Total: 0.119043 | LR=0.00077754 GradNorm=0.355 NegDet=0.000 | Val: Data=0.118409 Phys=0.000000 Total=0.118409 NegDet=0.000 | Sched(Wlow=0.108, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.18s

100%|████████████| 60/60 [00:18<00:00, 3.25it/s]

Epoch 24/60 | Base: 0.023270 Lap: 0.036373 Edge: 0.019667 | SpecLow: 0.131934 SpecHigh: 1.125070 | Data: 0.115507 Phys: 0.000000 Total: 0.115507 | LR=0.00075467 GradNorm=0.264 NegDet=0.000 | Val: Data=0.115774 Phys=0.000000 Total=0.115774 NegDet=0.000 | Sched(Wlow=0.102, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.07s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 25/60 | Base: 0.023223 Lap: 0.036173 Edge: 0.019642 | SpecLow: 0.131491 SpecHigh: 1.110091 | Data: 0.113746 Phys: 0.000000 Total: 0.113746 | LR=0.00073109 GradNorm=0.325 NegDet=0.000 | Val: Data=0.113462 Phys=0.000000 Total=0.113462 NegDet=0.000 | Sched(Wlow=0.097, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10, Wphys=1.00) | Time: 19.18s

100%|████████████| 60/60 [00:18<00:00, 3.16it/s]

Epoch 26/60 | Base: 0.022908 Lap: 0.035959 Edge: 0.019352 | SpecLow: 0.130766 SpecHigh: 1.095736 | Data: 0.111697 Phys: 0.000000 Total: 0.111697 | LR=0.00070689 GradNorm=0.227

NegDet=0.000 | Val: Data=0.112191 Phys=0.000000 Total=0.112191 NegDet=0.000 |
Sched(Wlow=0.092, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.10,
Wphys=1.00) | Time: 19.55s

100%|███████████| 60/60 [00:18<00:00, 3.24it/s]

Epoch 27/60 | Base: 0.022657 Lap: 0.035771 Edge: 0.019127 | SpecLow: 0.124611 SpecHigh:
1.081922 | Data: 0.109331 Phys: 0.000000 Total: 0.109331 | LR=0.00068215 GradNorm=0.261
NegDet=0.000 | Val: Data=0.108993 Phys=0.000000 Total=0.108993 NegDet=0.000 |
Sched(Wlow=0.086, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.11,
Wphys=1.00) | Time: 19.09s

100%|███████████| 60/60 [00:18<00:00, 3.20it/s]

Epoch 28/60 | Base: 0.022159 Lap: 0.035599 Edge: 0.018657 | SpecLow: 0.116534 SpecHigh:
1.066597 | Data: 0.106514 Phys: 0.000000 Total: 0.106514 | LR=0.00065694 GradNorm=0.159
NegDet=0.000 | Val: Data=0.107061 Phys=0.000000 Total=0.107061 NegDet=0.000 |
Sched(Wlow=0.082, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.11,
Wphys=1.00) | Time: 19.36s

100%|███████████| 60/60 [00:18<00:00, 3.21it/s]

Epoch 29/60 | Base: 0.022068 Lap: 0.035422 Edge: 0.018585 | SpecLow: 0.114748 SpecHigh:
1.055675 | Data: 0.105040 Phys: 0.000000 Total: 0.105040 | LR=0.00063135 GradNorm=0.223
NegDet=0.000 | Val: Data=0.105268 Phys=0.000000 Total=0.105268 NegDet=0.000 |
Sched(Wlow=0.077, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.12,
Wphys=1.00) | Time: 19.25s

100%|███████████| 60/60 [00:18<00:00, 3.20it/s]

Epoch 30/60 | Base: 0.021858 Lap: 0.035296 Edge: 0.018397 | SpecLow: 0.111782 SpecHigh:
1.044207 | Data: 0.103365 Phys: 0.000000 Total: 0.103365 | LR=0.00060546 GradNorm=0.221
NegDet=0.000 | Val: Data=0.103723 Phys=0.000000 Total=0.103723 NegDet=0.000 |
Sched(Wlow=0.073, Whigh=0.060, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.13,
Wphys=1.00) | Time: 19.30s
Checkpoint saved at epoch 30 (50% complete)

100%|███████████| 60/60 [00:18<00:00, 3.24it/s]

Epoch 31/60 | Base: 0.021630 Lap: 0.035180 Edge: 0.018185 | SpecLow: 0.107101 SpecHigh:
1.035856 | Data: 0.102914 Phys: 0.000000 Total: 0.102914 | LR=0.00057936 GradNorm=0.233
NegDet=0.000 | Val: Data=0.103161 Phys=0.000000 Total=0.103161 NegDet=0.000 |
Sched(Wlow=0.069, Whigh=0.061, pH=1.20, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.14,
Wphys=1.00) | Time: 19.10s

100%|███████████| 60/60 [00:18<00:00, 3.19it/s]

Epoch 32/60 | Base: 0.021357 Lap: 0.035020 Edge: 0.017924 | SpecLow: 0.105819 SpecHigh:
1.027494 | Data: 0.104871 Phys: 0.000000 Total: 0.104871 | LR=0.00055314 GradNorm=0.180
NegDet=0.000 | Val: Data=0.105263 Phys=0.000000 Total=0.105263 NegDet=0.000 |
Sched(Wlow=0.065, Whigh=0.064, pH=1.22, Wg=0.60, Wlap=0.20, Wedge=0.20, ROI=0.15,
Wphys=1.00) | Time: 19.37s

100%|████████████| 60/60 [00:18<00:00, 3.20it/s]

Epoch 33/60 | Base: 0.021357 Lap: 0.034828 Edge: 0.017921 | SpecLow: 0.108171 SpecHigh: 1.022686 | Data: 0.109757 Phys: 0.000000 Total: 0.109757 | LR=0.00052686 GradNorm=0.214 NegDet=0.000 | Val: Data=0.110337 Phys=0.000000 Total=0.110337 NegDet=0.000 | Sched(Wlow=0.062, Whigh=0.070, pH=1.24, Wg=0.61, Wlap=0.20, Wedge=0.20, ROI=0.17, Wphys=1.00) | Time: 19.32s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 34/60 | Base: 0.021350 Lap: 0.034662 Edge: 0.017902 | SpecLow: 0.110503 SpecHigh: 1.022904 | Data: 0.117082 Phys: 0.000000 Total: 0.117082 | LR=0.00050064 GradNorm=0.235 NegDet=0.000 | Val: Data=0.117448 Phys=0.000000 Total=0.117448 NegDet=0.000 | Sched(Wlow=0.059, Whigh=0.077, pH=1.28, Wg=0.61, Wlap=0.20, Wedge=0.20, ROI=0.18, Wphys=1.00) | Time: 19.20s

100%|████████████| 60/60 [00:18<00:00, 3.23it/s]

Epoch 35/60 | Base: 0.021334 Lap: 0.034475 Edge: 0.017869 | SpecLow: 0.113667 SpecHigh: 1.020914 | Data: 0.126292 Phys: 0.000000 Total: 0.126292 | LR=0.00047454 GradNorm=0.251 NegDet=0.000 | Val: Data=0.126537 Phys=0.000000 Total=0.126537 NegDet=0.000 | Sched(Wlow=0.056, Whigh=0.086, pH=1.32, Wg=0.62, Wlap=0.21, Wedge=0.20, ROI=0.20, Wphys=1.00) | Time: 19.10s

100%|████████████| 60/60 [00:18<00:00, 3.22it/s]

Epoch 36/60 | Base: 0.021454 Lap: 0.034258 Edge: 0.017959 | SpecLow: 0.120343 SpecHigh: 1.023121 | Data: 0.138149 Phys: 0.000000 Total: 0.138149 | LR=0.00044865 GradNorm=0.258 NegDet=0.000 | Val: Data=0.138086 Phys=0.000000 Total=0.138086 NegDet=0.000 | Sched(Wlow=0.054, Whigh=0.097, pH=1.37, Wg=0.62, Wlap=0.21, Wedge=0.20, ROI=0.21, Wphys=1.00) | Time: 19.22s
Early stopping at epoch 36