

## ■ Processing APMP\_Cal data from SCL Hong Kong

```
In[1]:= Off[General::spell1];
```

```
In[2]:= dataPath = "g:\APMP_Cal\";
```

### ■ Definitions

```
In[25]:= dataHost = ReadCCTF["host.scl.dat"];
(*Host reported values:*)
RepHostIntDly = 55;
  RepHostRefDly = 10;
  RepHostAntDly = 728;
RepHostDly = RepHostIntDly + RepHostAntDly - RepHostRefDly;

(*Host Receiver internal settings:*)
RxHostIntDly = 55;
  RxHostRefDly = 10;
  RxHostAntDly = 728;
RxHostDly = RxHostIntDly + RxHostAntDly - RxHostRefDly;
HostCorrection = RepHostDly - RxHostDly;

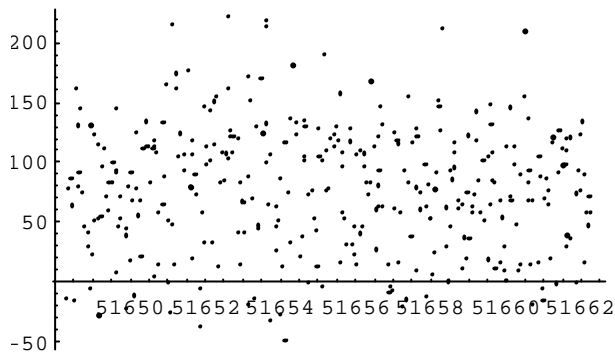
dataTrav = ReadCCTF["trav.scl.dat"];
(*Host reported values:*)
RepTravIntDly = 68;
  RepTravRefDly = 10;
  RepTravAntDly = 720;
RepTravDly = RepTravIntDly + RepTravAntDly - RepTravRefDly;

(*Travelling receiver internal settings:*)
RxTravIntDly = 68;
  RxTravRefDly = 10;
  RxTravAntDly = 720;
RxTravDly = RxTravIntDly + RxTravAntDly - RxTravRefDly;
TravCorrection = RepTravDly - RxTravDly;

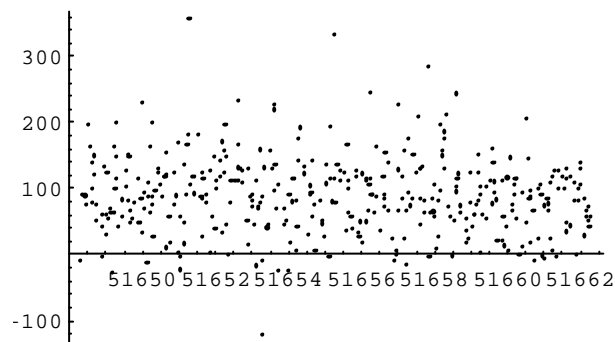
> Read 382 tracks from g:\APMP_Cal\host.scl.dat
> Read 346 tracks from g:\APMP_Cal\trav.scl.dat

In[45]:= << Graphics`Graphics`
```

```
In[46]:= ListPlot[MakeXY[Map[DateValue, dataTrav], Map[RefGPS, dataTrav]]];
```



```
In[47]:= ListPlot[MakeXY[Map[DateValue, dataHost], Map[RefGPS, dataHost]]];
```



```
In[48]:= dMerge = MergeCCTF[dataHost, dataTrav];
```

```
> First 382 tracks, second 346 tracks, matching 289 tracks
```

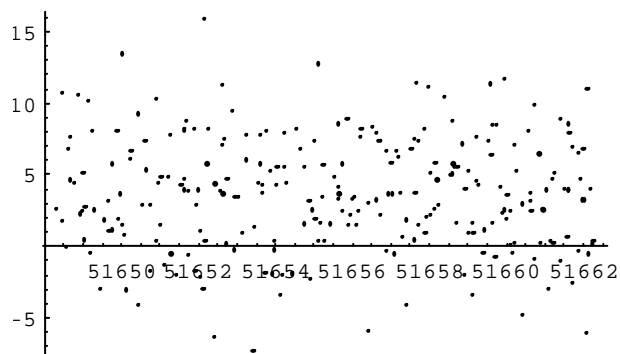
```
In[49]:= diffdataGPS =
```

```
Map[{DateValue[#1], RefSV[#1] - RefSV2[#1] - HostCorrection + TravCorrection,
TrackLength[#1], TrackLength2[#1]} &, dMerge];
```

```
In[50]:= diffdataGPS = FilterTrackLength[diffdataGPS, 780];
```

```
256 common tracks out of 289 were of length greater than or equal to 780 seconds.
```

```
In[51]:= ListPlot[diffdataGPS, PlotRange -> All];
```



```
In[52]:= << Statistics`LinearRegression`
```

```
In[53]:= regress = Regress[diffdataGPS, {1, x}, x];
rtable = ANOVATable /. regress;
ptable = ParameterTable /. regress;
MJDFirst = First[dMerge][[3]];
MJDLast = Last[dMerge][[3]];
MJDMiddle = MJDFirst + (MJDFirst - MJDLast) / 2;
intercept = ptable[[1, 1, 1]];
SEintercept = ptable[[1, 1, 2]];
slope = ptable[[1, 2, 1]];
SEslope = ptable[[1, 2, 2]];
rms = Sqrt[rtable[[1, 2, 3]]];
MeanOffset = intercept + slope * MJDMiddle;
Print["Summary"];
Print[Length[dMerge], " common-view tracks were analysed between MJD ",
  MJDFirst, " and MJD ", MJDLast];
Print["The mean offset (Host Rx - Travelling Rx) between the two receivers was ",
  MeanOffset, " ns, with an RMS deviation of ", rms, " ns."];
Print["The slope of the line of best fit was ", slope*1000,
  " ps/day, with a standard error of ", SEslope*1000, " ps/day."];
```

Summary

289 common-view tracks were analysed between MJD 51648 and MJD 51662

The mean offset (Host Rx - Travelling Rx) between the two receivers was  
3.97377 ns, with an RMS deviation of 3.90487 ns.

The slope of the line of best fit was -21.5095  
ps/day, with a standard error of 60.0925 ps/day.