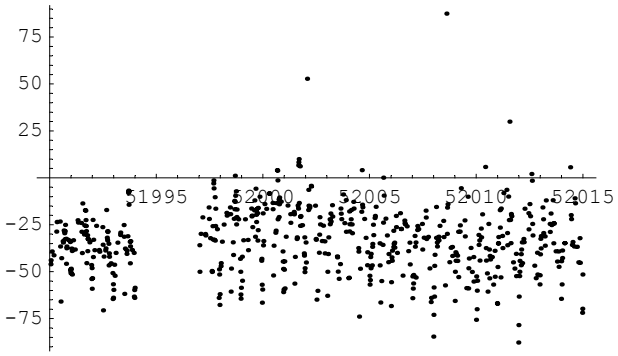
■ Processing APMP_Cal data from PSB Singapore

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

In[2]:= dataPath = "f:\\Trip 2 March 2001 - July 2001\\PSB Singapore\\";
```

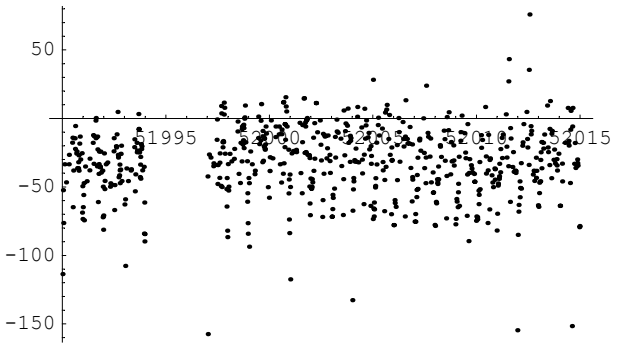
■ Definitions

```
In[28]:= dataHost = ReadCCTFAustron["host.txt"];
         (*Host  reported values:*)
         RepHostIntDly = 142;
           RepHostRefDly = 16;
          RepHostAntDly = 403;
         RepHostDly = RepHostIntDly + RepHostAntDly - RepHostRefDly;

         (*Host Receiver internal settings:*)
         RxHostIntDly = 142;
           RxHostRefDly = 16;
          RxHostAntDly = 403;
         RxHostDly = RxHostIntDly + RxHostAntDly - RxHostRefDly;
         HostCorrection = RepHostDly - RxHostDly;

         dataTrav = ReadCCTF["trav.txt"];
         (*Host  reported values:*)
         RepTravIntDly = 68;
           RepTravRefDly = 16;
          RepTravAntDly = 392;
         RepTravDly = RepTravIntDly + RepTravAntDly - RepTravRefDly;

         (*Travelling receiver internal settings:*)
         RxTravIntDly = 68;
           RxTravRefDly = 16;
          RxTravAntDly = 392;
         RxTravDly = RxTravIntDly + RxTravAntDly - RxTravRefDly;
         TravCorrection = RepTravDly - RxTravDly;
         Null

        > Read 605 tracks from f:\Trip 2 March 2001 - July 2001\PSB Singapore\host.txt

        > Read 563 tracks from f:\Trip 2 March 2001 - July 2001\PSB Singapore\trav.txt

In[49]:= Do[dataHost[[i, 3]] += 50000, {i, 1, Dimensions[dataHost][[1]]}];

In[50]:= << Graphics`Graphics`
```

In[51]:=
```
ListPlot[MakeXY[Map[DateValue, dataTrav], Map[RefGPS, dataTrav]],
  PlotRange → All];

(* RAW DATA FROM TRAVELLING RECEIVER *)
```



In[52]:=
```
ListPlot[MakeXY[Map[DateValue, dataHost], Map[RefGPSAustron, dataHost]],
  PlotRange → All];

(* RAW DATA FROM PSB HOST *)
```



In[53]:=
```
dMerge = MergeCCTF[dataHost, dataTrav];
```

```
> First 605 tracks, second 563 tracks, matching 385 tracks
```

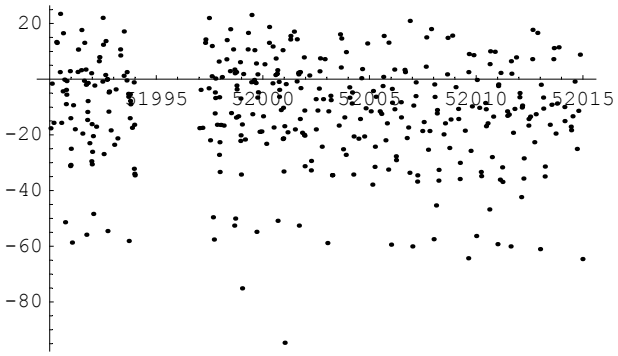
In[54]:=
```
diffdataGPS = Map[
    {DateValue[#1], RefSVAustron[#1] - RefSV2[#1] - HostCorrection + TravCorrection,
      TrackLength[#1], TrackLength2[#1]} &, dMerge];
```

In[55]:=
```
diffdataGPS = FilterTrackLength[diffdataGPS, 780];
```

```
371 common tracks out of 385 were of length greater than or equal to 780 seconds.
```

In[56]:=
```
ListPlot[diffdataGPS, PlotRange → All];
```

```
(* HOST RECEIVER DATA - TRAVELLING RECEIVER DATA *)
```



In[57]:=
```
<< Statistics`LinearRegression`
```

In[58]:=
```
regress = Regress[diffdataGPS // N, {1, x}, x];
rtable = ANOVATable /. regress;
ptable = ParameterTable /. regress;
MJDFirst = First[dMerge][[3]];
MJDLast = Last[dMerge][[3]];
MJDMiddle = MJDFirst + (MJDLast - MJDFirst) / 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["\!\(\*
StyleBox[\"Summary\",\n\"Output\"]\)"];
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

385 common-view tracks were analysed between MJD 51990 and MJD 52014

The mean offset (Host Rx - Travelling Rx) between the two receivers was
 -11.5605 ns, with an RMS deviation of 19.1724 ns.

The slope of the line of best fit was
 -301.706 ps/day, with a standard error of 139.208 ps/day.