NEWS PRESENCE OF ASTEROID NAMES RELATES TO ANGLES TO SPECIAL POINTS

-- COLLECTION STARTED ON FEB 15, 2022-- EVALUATED DAILY UNTIL DEC 1, 2023 --

```
(*Today's Date and Time of Collection & Reporting UTC*)
Style[DateString[TimeZoneConvert[DateObject[Date[]], "UTC"]], "Subtitle"]
```

Sat 23 Sep 2023 23:48:12

```
SetDirectory["/home/rko/Documents/Wolfram Desktop/Asteroids1211"];(*use your own directory here*)
```

Collection of Data

```
sundata = Import["MinorPlanetSunData.csv"][[All ;; -2]];
```

Normalize and then average the daily article count across all individual minor planets

Extract Dates from Imported Data

```
(*dates=
  Table[DateObject[ToString[sundata[[2;;All,1]][[i]]],{i,1,Length[sundata[[2;;All,1]]]}]//Quiet;*)
```

```
(*dates=
  Table[Interpreter["ComputedDateTime"][sundata[[2;;All,1]][[i]]<>" 12:00:00 pm London TimeZone"],
   {i,1,Length[sundata[[2;;All,1]]]}];*)
```

```
(*Export["noondates.m",dates]*)
```

```
dates = Import["noondates.m"];
```

```
Length[dates]
```

290

$$\text{degrees-Sun} \quad \text{-(SPECIALPOINT -Sun) = degrees - SPECIALPOINT}$$

```
Now
```

Tue 26 Sep 2023 17:52:27 GMT−6

```
AstroAngularSeparation[Entity["Star", "Sun"], Moon PLANETARY MOON, Now]
```

146.014°

```
specialpoints = {firstpointofaries, sun, moon, mercury, venus, mars, jupiter, saturn, uranus, neptune, pluto};
specialpointsfiles = Table[ToString[specialpoints[[i]]] <> ".m", {i, Length[specialpoints]}]
specialpointsentities = {Mesarthim STAR, Sun STAR, Moon PLANETARY MOON, Mercury PLANET, Venus PLANET,
    Mars PLANET, Jupiter PLANET, Saturn PLANET, Uranus PLANET, Neptune PLANET, Pluto MINOR PLANET};
```

{firstpointofaries.m, sun.m, moon.m, mercury.m, venus.m, mars.m, jupiter.m, saturn.m, uranus.m, neptune.m, pl

```
{"firstpointofaries.m", "sun.m", "moon.m", "mercury.m", "venus.m", "mars.m", "jupiter.m", "saturn.m",
 "uranus.m", "neptune.m", "pluto.m"}
```

{firstpointofaries.m, sun.m, moon.m, mercury.m, venus.m, mars.m, jupiter.m, saturn.m, uranus.m, neptune.m, pl

```
(*For[j=1,j≤Length[specialpoints],j++,
  specialpoints⟦j⟧={};
  For[nowi=1,nowi≤290(*Length[do]*),nowi++,
   now=dates⟦nowi⟧;
   AppendTo[specialpoints⟦j⟧,
    QuantityMagnitude[AstroAngularSeparation[Entity["Star","Sun"],specialpointsentities⟦j⟧,now]]];
  ];
  Export[specialpointsfiles⟦j⟧,specialpoints⟦j⟧]
 ];*)
```

```
specialpoints = Table[Import[specialpointsfiles⟦i⟧], {i, Length[specialpoints]}];
```

```
StarData[Mesarthim STAR, "GeocentricEclipticLongitude"]
```

$33^\circ\,11'\,1.\times 10^{1}\,''$

Mesarthim was chosen as it is (currently) the closest fixed star to Sidereal placement to the Sun at the point of the Vernal Equinox . It does move but very slowly over the course of thousands of years . All other fixed reference points (such as the first point of Aries, etc). should just represent a phase-shift to the Mesarthim data. As such, the Mesarthim analysis below for peak period and frequency identification, and so on applies equally to any fixed point of the zodiac.

Check whether dates are sampled regularly day by day and check number of dates

```
RegularlySampledQ[dates]
```

True

```
Length[dates]
```

290

Extract Article Counts and Angles of Namesakes to Special Points By Degree

```
toanalyse = sundata⟦2 ;; All, 2 ;; All⟧;
```

```
toanalyse⟦All, -1⟧
```

```
{150.7, 149.48, 148.27, 147.06, 145.86, 144.67, 143.48, 142.3, 141.13, 139.96, 138.8, 137.65, 136.51, 135.37, 1
 133.12, 132.01, 130.9, 129.8, 128.71, 127.63, 126.55, 125.49, 124.43, 123.38, 122.33, 121.29, 120.31, 119.29,
 118.27, 117.27, 116.27, 115.28, 114.29, 113.31, 112.34, 111.38, 110.42, 109.47, 108.53, 107.59, 106.66,
 105.73, 104.82, 103.91, 103., 102.1, 101.21, 100.33, 99.45, 98.57, 97.7, 96.84, 95.99, 95.13, 94.29, 93.45,
 92.617, 91.79, 90.96, 90.15, 89.33, 88.52, 87.72, 86.92, 86.13, 85.34, 84.55, 83.77, 83., 82.23, 81.46, 80.7,
 79.94, 79.18, 78.43, 77.69, 76.94, 76.2, 75.47, 74.74, 74.01, 73.29, 72.57, 71.85, 71.14, 70.43, 69.72,
 69.02, 68.32, 67.62, 66.93, 66.24, 65.55, 64.87, 64.18, 63.5, 62.83, 62.15, 61.48, 60.82, 60.15, 59.49,
 58.82, 58.17, 57.51, 56.86, 56.21, 55.56, 54.91, 54.27, 53.62, 52.98, 52.35, 51.71, 51.08, 50.44, 49.81,
 49.19, 48.56, 47.94, 47.32, 46.69, 46.08, 45.46, 44.84, 44.23, 43.61, 43., 42.39, 41.78, 41.18, 40.57, 39.97,
 39.36, 38.76, 38.16, 37.56, 36.97, 36.37, 35.77, 35.18, 34.59, 34., 33.4, 32.81, 32.23, 31.64, 31.05, 30.47,
 29.88, 29.3, 28.71, 28.13, 27.55, 26.97, 26.39, 25.81, 25.23, 24.65, 24.07, 23.5, 22.92, 22.34, 21.77,
 21.19, 20.62, 20.05, 19.47, 18.9, 18.33, 17.75, 17.18, 16.61, 16.04, 15.47, 14.9, 14.33, 13.76, 13.19,
 12.62, 12.05, 11.49, 10.92, 10.35, 9.78, 9.21, 8.64, 8.08, 7.51, 6.94, 6.37, 5.8, 5.23, 4.66, 4.1, 3.53,
 2.96, 2.39, 1.82, 1.25, 0.68, 0.11, 359.54, 358.98, 358.41, 357.84, 357.27, 356.7, 356.12, 355.55, 354.98,
 354.41, 353.84, 353.26, 352.69, 352.12, 351.54, 350.97, 350.39, 349.82, 349.24, 348.67, 348.09, 347.51,
 346.93, 346.35, 345.77, 345.19, 344.61, 344.03, 343.45, 342.87, 342.29, 341.7, 341.12, 340.53, 339.95,
 339.36, 338.78, 338.19, 337.6, 337.01, 336.42, 335.83, 335.24, 334.64, 334.05, 333.45, 332.86, 332.26,
 331.66, 331.06, 330.46, 329.86, 329.26, 328.66, 328.05, 327.45, 326.84, 326.24, 325.63, 325.02, 324.41,
 323.8, 323.16, 322.55, 321.93, 321.32, 320.7, 320.08, 319.46, 318.84, 318.22, 317.59, 316.97, 316.34,
 315.71, 315.08, 314.45, 313.82, 313.19, 312.55, 311.92, 311.28, 310.64, 310., 309.35, 308.71, 308.06}
```

```
articles = Table[toanalyse⟦All, i⟧, {i, 1, Length[toanalyse⟦1⟧], 2}];
```

```
anglesdegstable = Table[Table[Mod[toanalyse⟦All, i⟧ - specialpoints⟦j⟧, 360], {i, 2, Length[toanalyse⟦1⟧], 2}]
   {j, Length[specialpoints]}];
```

```
Dimensions[anglesdegstable]
```

{11, 1211, 290}

For Each Minor Planet Studied, Construct Time Series for the Normalized Article Counts

```
articlesTS = Table[TimeSeries[articles⟦i⟧, {dates}], {i, 1, Length[articles]}];
```

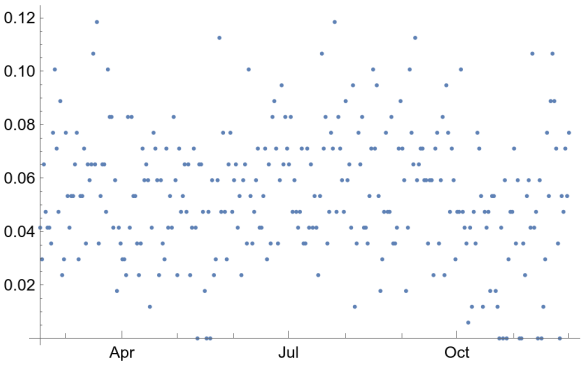
```
normarticlesTS = Table[Normalize[articlesTS⟦i⟧], {i, 1, Length[articlesTS]}];
```

Look at an Example, the Second One, for a Time Series of the Number of Articles Per Day

```
normarticlesTS[[2]]
```

TimeSeries[Time: 15 Feb 2022 to 01 Dec 2022 Data points: 290]

```
ListPlot[%]
```



Similarly, Construct a Time Series for the Upper Angular Degrees to Each Special Point for Each Minor Planet

```
Length[specialpoints]
```

11

```
(*anglesTStable=Table[Table[TimeSeries[anglesdegstable[[j,i]],{dates}],{i,1,290}],{j,Length[specialpoints]}
```

```
(*Dimensions[anglesTStable]*)
```

```
Dimensions[anglesdegstable]
```

{11, 1211, 290}

```
justangles = Table[Flatten[Table[Mod[Ceiling[anglesdegstable[[j, i]]], 360], {i, 1, 1211}]],
   {j, Length[specialpoints]}];(*so degree within 0 to 1 would count as being at 1 degree,
29 to 30 would count as 30 degrees, because reportage of articles are read across following day,
lag of one etc.*)
```

```
Dimensions[justangles]
```

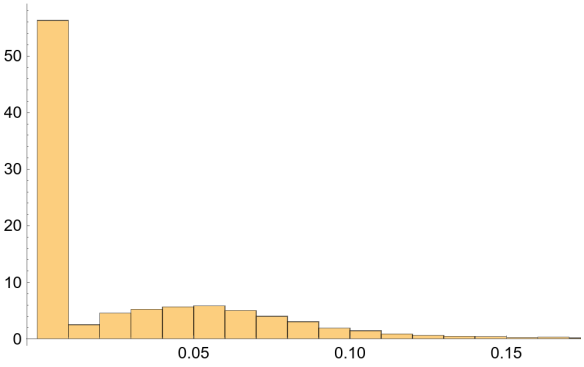
{11, 351 190}

```
justvalues = Flatten[Table[Values[normarticlesTS[[i]]], {i, Length[normarticlesTS]}]];
```

```
Length[justvalues]
```

351 190

```
Histogram[justvalues, Automatic, "ProbabilityDensity"]
(*a substantial number had no recorded articles for that name & day*)
```



Now, combine angles and article counts.

```
Dimensions[justangles]
```

{11, 351 190}

```
justtable = Table[Transpose[{justangles[[j]], justvalues}], {j, Length[specialpoints]}];
```

```
Length[justtable[[1]]] (*this is the number of data points to date*)
```

351 190

```
Length[dates] * Length[articles](*confirmation of number of data points!*)
```

351 190

Calculate the average normalized article count per upward degree.

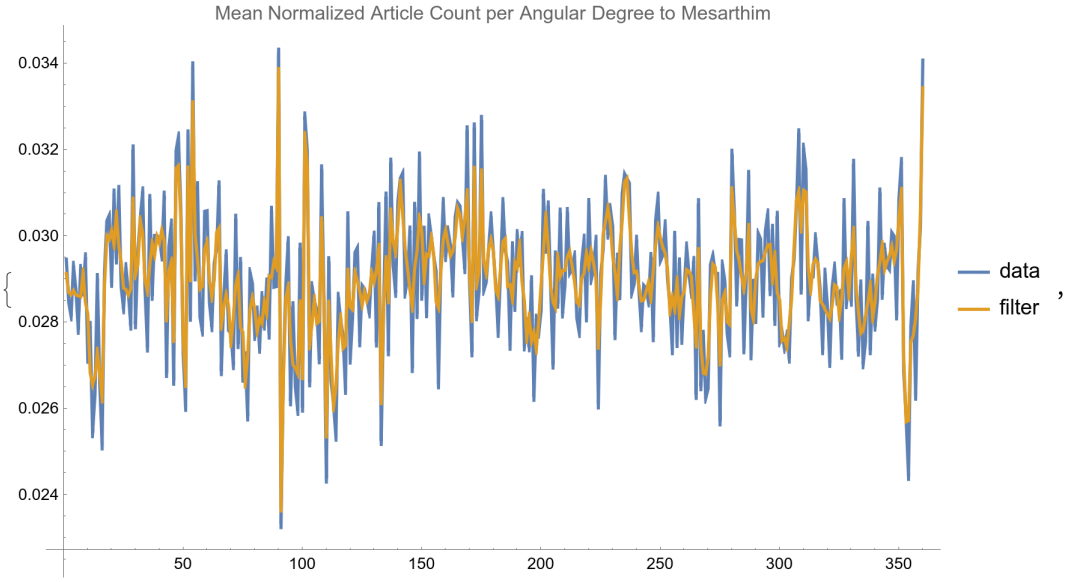
```
valgrpbydegtable =
  Table[KeySort[GroupBy[N[justtable[[j]]], First → Last, Mean]], {j, Length[specialpoints]}];

Length[valgrpbydegtable[[1]]]
```

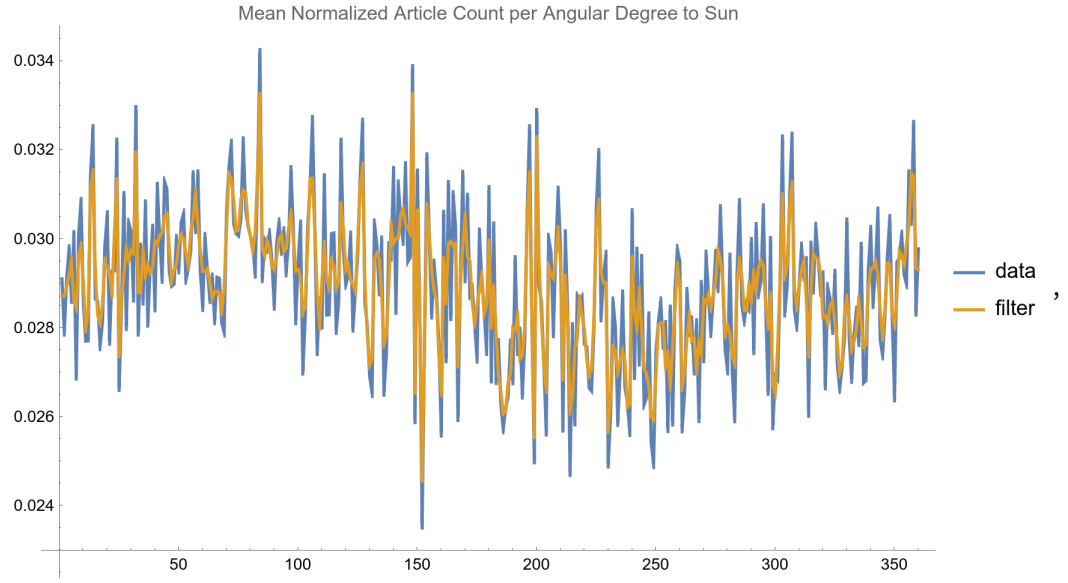
360

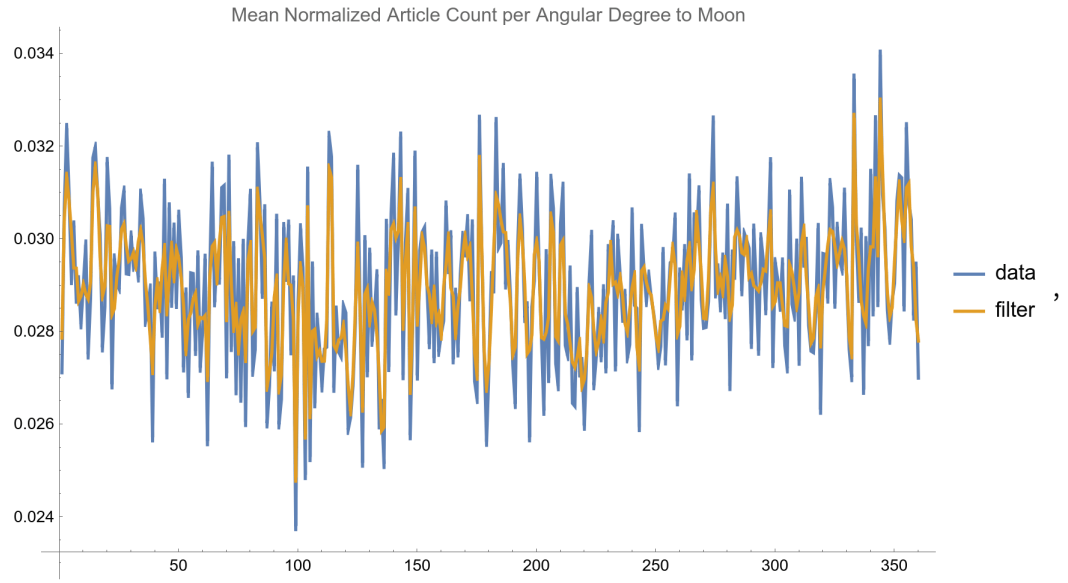
```
(*matable=Table[peaks=FindPeaks[MovingAverage[Values[valgrpbydegtable[[j]]],120]];
  ListLinePlot[{MovingAverage[Values[valgrpbydegtable[[j]]],10],peaks},
   Joined→{True,False},
   PlotStyle→{Automatic,PointSize[.03]},
   PlotLabel→"Moving Average Peaks for "<>CommonName[specialpointsentities[[j]]<>"Special Point: "<>
     ToString[Length[peaks]],ImageSize→Large],{j,Length[specialpoints]}]*)
```

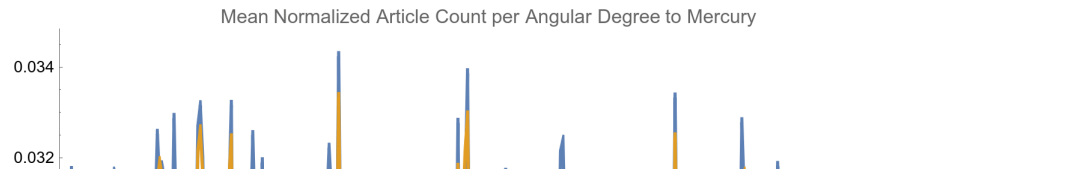
Filter data by applying the Wiener filter (of range 1 and fixed padding) to remove noise.

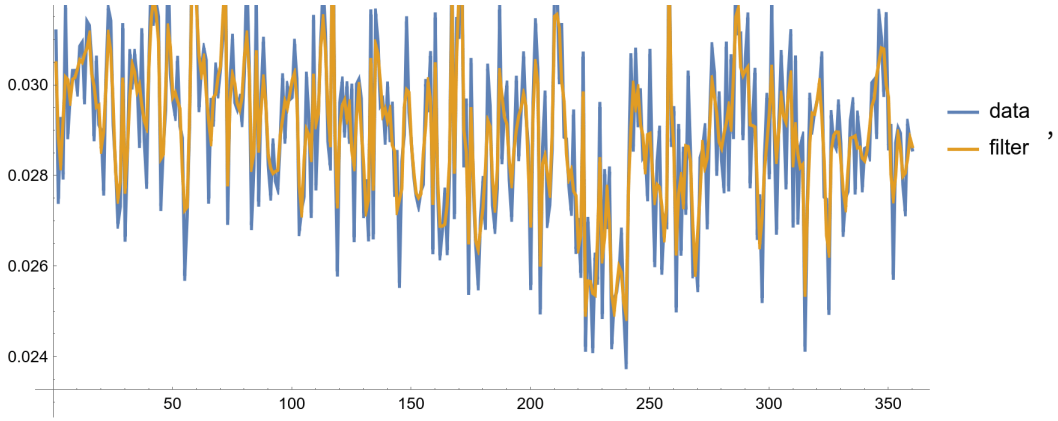
```
datatable = Table[WienerFilter[Values[valgrpbydegtable[[j]]], 1], {j, Length[specialpoints]}];

wftable = Table[ListLinePlot[{Values[valgrpbydegtable[[i]]], datatable[[i]]}, Filling → {2 → {1}},
   PlotLegends → {"data", "filter"},
   PlotLabel → "Mean Normalized Article Count per Angular Degree to " <> CommonName[specialpointsentities[[i
   ImageSize → Large(*,AxesLabel→{"Degree","Mean"}*)], {i, 11}]
```


Mean Normalized Article Count per Angular Degree to Mesarthim
0.034
0.032
0.030
0.028
0.026
0.024
50
100
150
200
250
300
350
data
filter


Mean Normalized Article Count per Angular Degree to Sun
0.034
0.032
0.030
0.028
0.026
0.024
50
100
150
200
250
300
350
data
filter

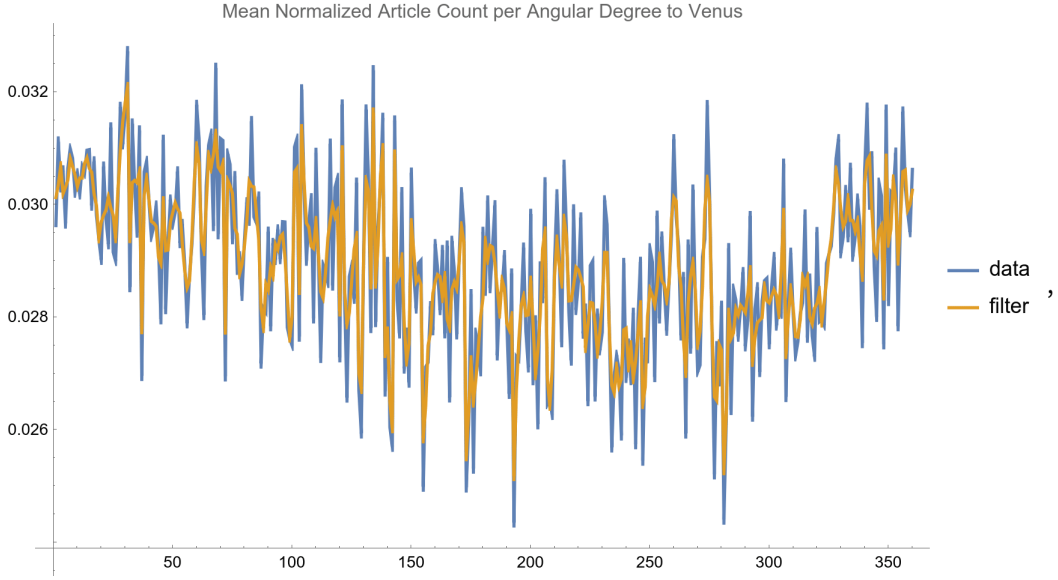

Mean Normalized Article Count per Angular Degree to Moon
0.034
0.032
0.030
0.028
0.026
0.024
50
100
150
200
250
300
350
data
filter


Mean Normalized Article Count per Angular Degree to Mercury
0.034
0.032



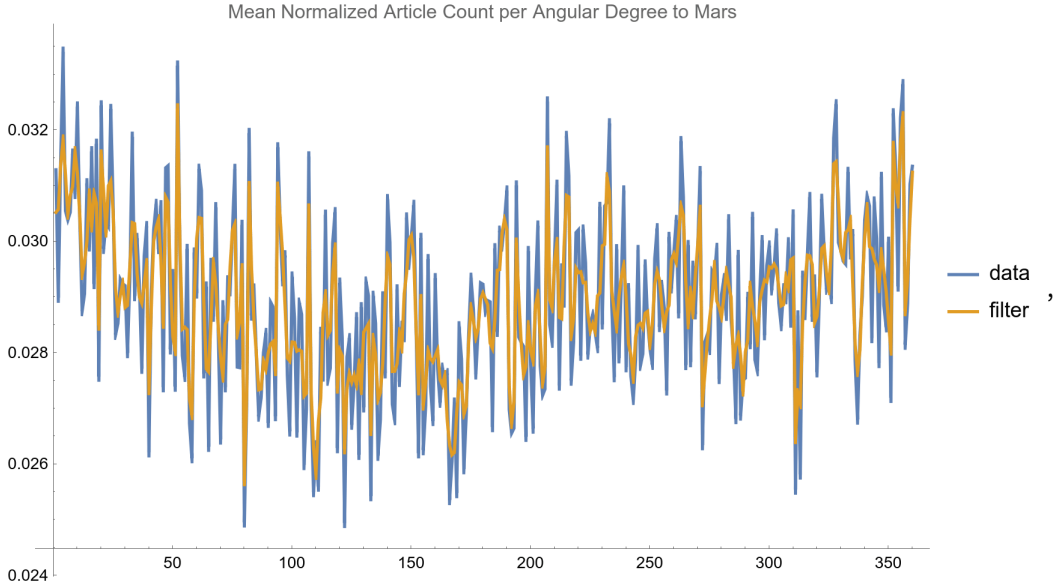
,

Mean Normalized Article Count per Angular Degree to Venus



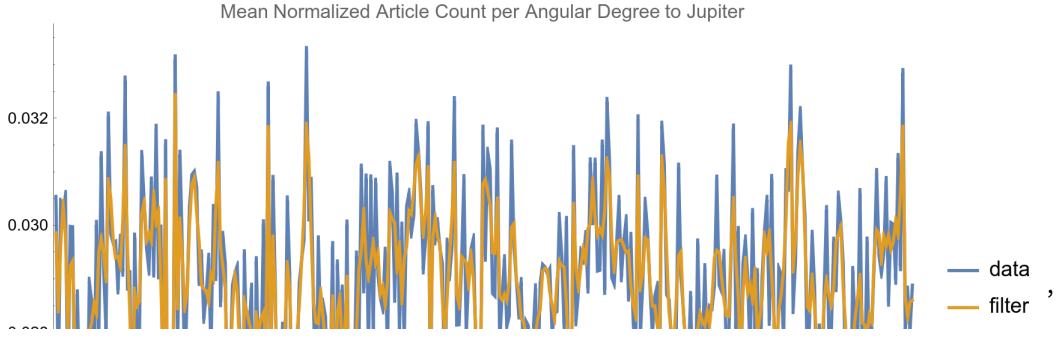
,

Mean Normalized Article Count per Angular Degree to Mars

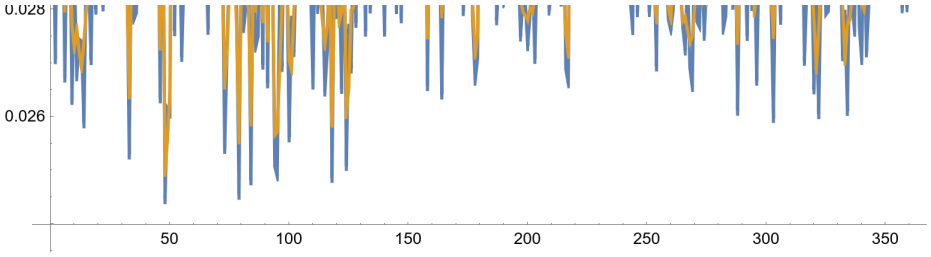


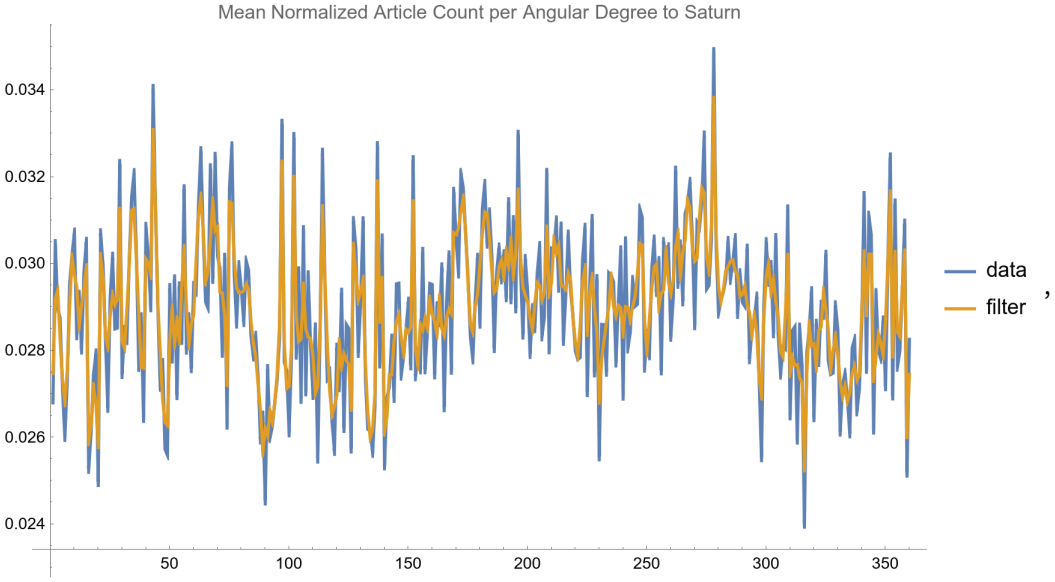
,

Mean Normalized Article Count per Angular Degree to Jupiter

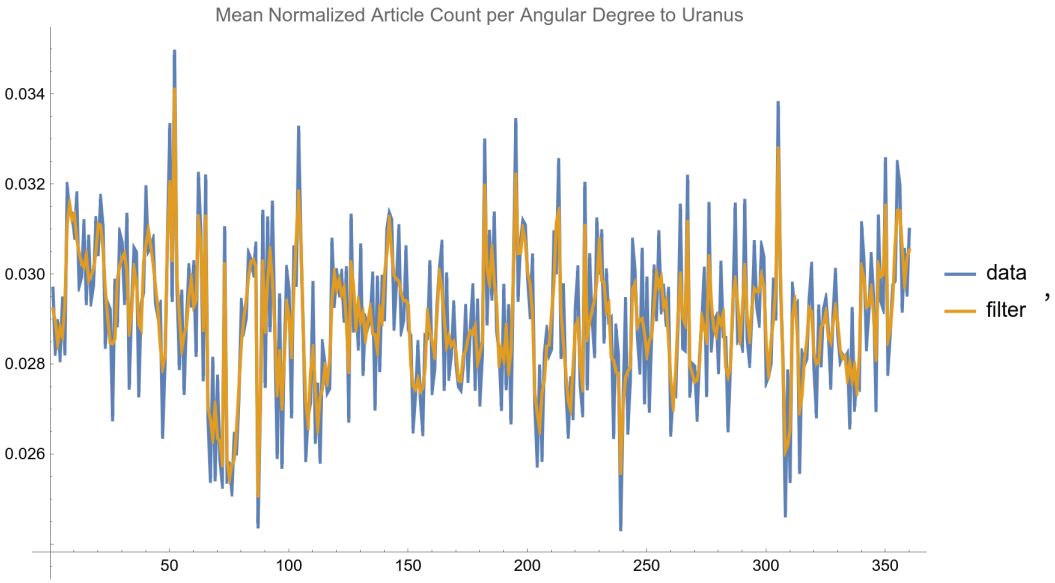


,

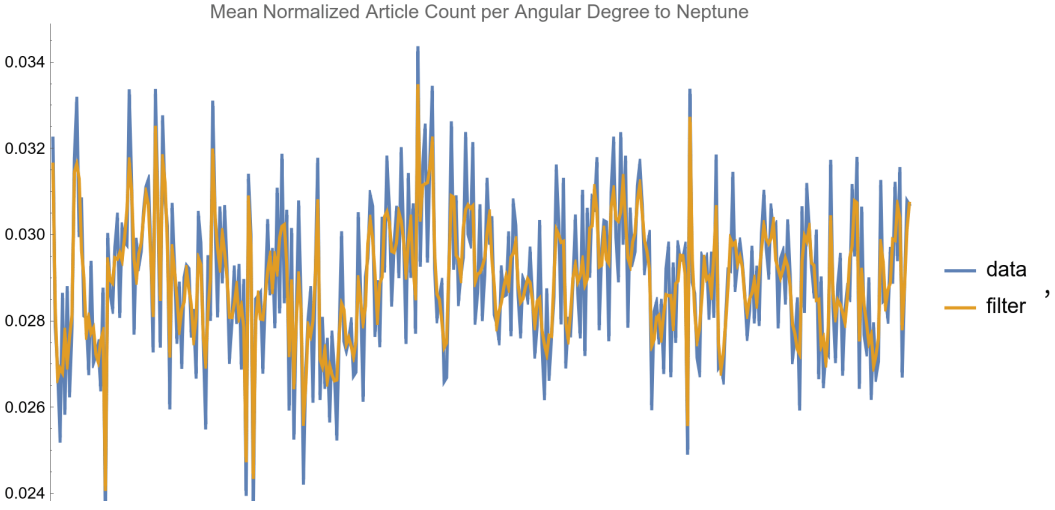

0.028
0.026
50
100
150
200
250
300
350


Mean Normalized Article Count per Angular Degree to Saturn
0.034
0.032
0.030
0.028
0.026
0.024
50
100
150
200
250
300
350
data
filter

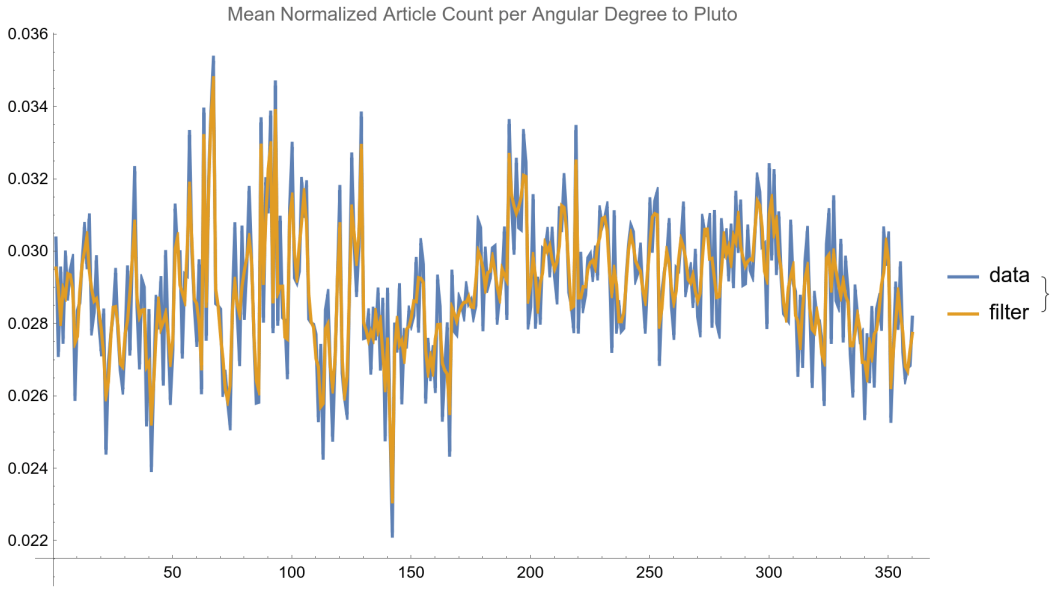
,


Mean Normalized Article Count per Angular Degree to Uranus
0.034
0.032
0.030
0.028
0.026
50
100
150
200
250
300
350
data
filter

,


Mean Normalized Article Count per Angular Degree to Neptune
0.034
0.032
0.030
0.028
0.026
0.024
data
filter

,

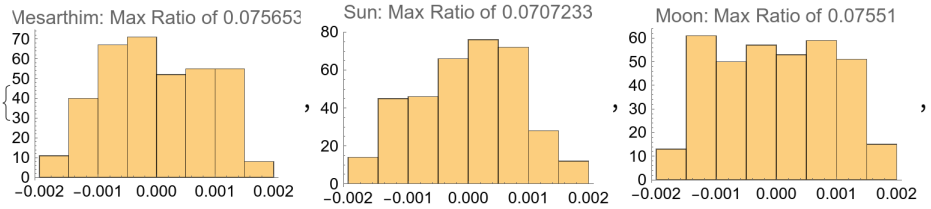


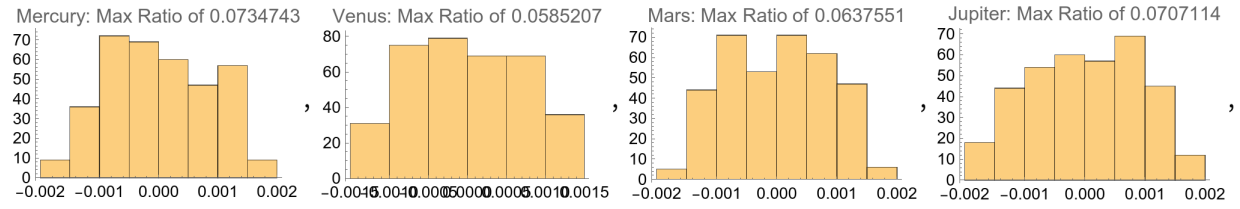

```
(*Table[Export["wienerfilter"<>CommonName[specialpointsentities[[i]]]<>".png",wftable[[i]],{i,11}]*)
```

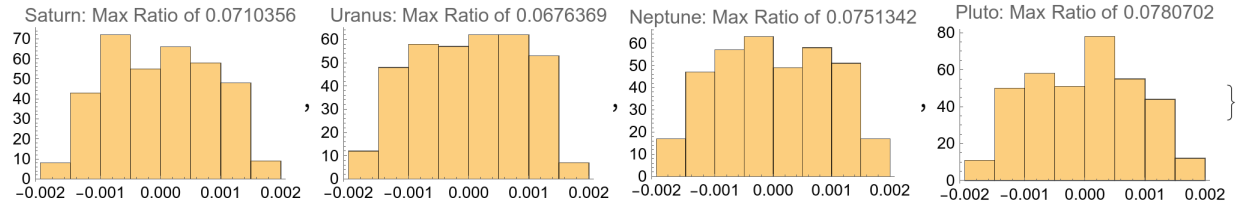
Look at the residuals.

```
residuals = Table[Rest[datatable[[i]] - Values[valgrpbydegtable[[i]]]], {i, Length[datatable]}];
```

```
Table[
 Histogram[residuals[[i]],
  PlotLabel → CommonName[specialpointsentities[[i]]] <> ": Max Ratio of " <>
    ToString[Max[Abs[residuals[[i]]]] / Min[Abs[datatable[[i]]]]], {i, 1, Length[residuals]}]
```








```
Table[AutocorrelationTest[residuals[[i]]], {i, 1, Length[residuals]}]
```

$$\{1.72842\times10^{-36},\ 3.48888\times10^{-27},\ 1.39948\times10^{-42},\ 5.93682\times10^{-33},\ 5.99768\times10^{-32},\ 1.44424\times10^{-30},\ 5.75139\times10^{-42},\ 1.1043\times10^{-32},\ 4.27523\times10^{-39},\ 1.057\times10^{-37},\ 1.27227\times10^{-32}\}$$

```
Table[DistributionFitTest[residuals[[i]]], {i, 1, Length[residuals]}]
```

$$\{7.07795\times10^{-6},\ 0.00158574,\ 1.81256\times10^{-7},\ 0.0000448705,\ 0.0000396697,\ 3.72438\times10^{-6},\ 5.10201\times10^{-6},\ 0.0000269898,\ 2.22918\times10^{-6},\ 3.74964\times10^{-6},\ 0.0000370844\}$$

Assumptions : Homoscedasticity : The variance of the time series should be constant over time . Normally Distributed Residuals : While this is not a strict requirement, if the residuals of the model are not

approximately normally distributed, the p - values associated with the Ljung - Box statistic might not be accurate .

Test for randomness in filtered data

For a significance level of 0.05, the upper value for family-wise p-value test for significance is 0.01/22 or 0.002272727. That far exceeds by many orders of magnitude all the p-values below.

```
TableForm[
 Transpose[{CommonName[specialpointsentities],
   Table[AutocorrelationTest[datatable[[i]], Automatic, "HypothesisTestData"]["TestStatisticTable", "PValue"
    {i, Length[specialpoints]}]}]]
 (*TEST WHETHER NOT
 RANDOM: values less than 0.05 are generally understood to be associated with non-random data*)
```

Mesarthim	Statistic	
	Ljung-Box	111.974
		7.86628*10^^-22
Sun	Statistic	
	Ljung-Box	280.633
		1.1501*10^^-57
Moon	Statistic	
	Ljung-Box	114.471
		2.3572*10^^-22
Mercury	Statistic	
	Ljung-Box	289.373
		1.54657*10^^-59
Venus	Statistic	
	Ljung-Box	541.224
		1.10073*10^^-113
Mars	Statistic	
	Ljung-Box	338.364
		4.85371*10^^-70
Jupiter	Statistic	
	Ljung-Box	163.745
		9.52852*10^^-33
Saturn	Statistic	
	Ljung-Box	280.556
		1.19454*10^^-57
Uranus	Statistic	
	Ljung-Box	241.284
		2.98518*10^^-49
Neptune	Statistic	
	Ljung-Box	206.406
		8.20935*10^^-42
Pluto	Statistic	
	Ljung-Box	320.99
		2.58909*10^^-66

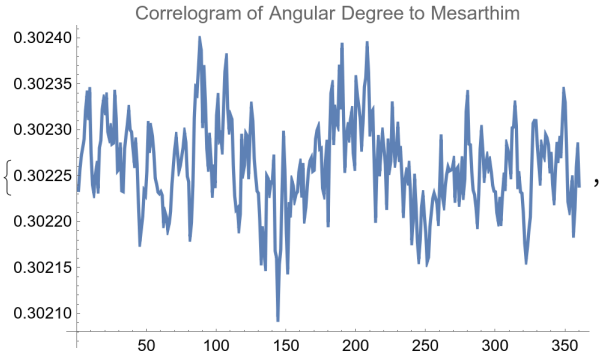
Test for stationarity (cyclicity) in filtered data with accounting for an underlying nonzero mean

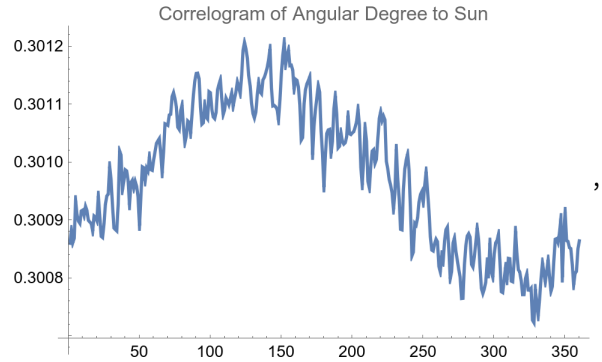
```
TableForm[
 Transpose[{CommonName[specialpointsentities],
   Table[UnitRootTest[datatable[[i]], "Constant", "HypothesisTestData"]["TestStatisticTable", "PValue"] ,
    {i, Length[specialpoints]}]}]]
 (*TEST WHETHER UNIT
 ROOT: values greater than 0.05 are generally understood to HAVE A UNIT ROOT i.e. are non
   stationary so these data are all likely to be at least weakly stationary,
i.e. cyclic*)
```

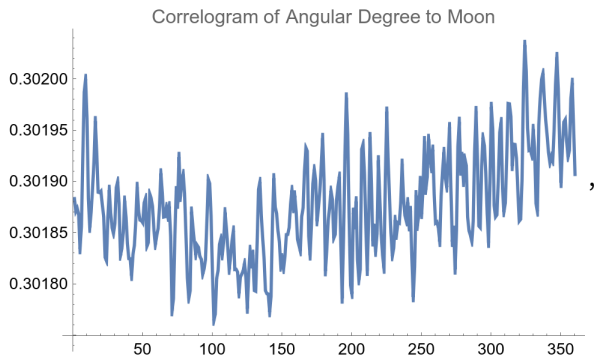
Mesarthim	Statistic	
	Dickey-Fuller F	-187.999
		9.49505*10^^-12
Sun	Statistic	
	Dickey-Fuller F	-142.285
		1.48263*10^^-10
Moon	Statistic	
	Dickey-Fuller F	-178.753
		1.56116*10^^-11
Mercury	Statistic	
	Dickey-Fuller F	-122.589
		6.45372*10^^-10
Venus	Statistic	
	Dickey-Fuller F	-106.273
		2.64559*10^^-9
Mars	Statistic	
	Dickey-Fuller F	-123.653
		5.92611*10^^-10
Jupiter	Statistic	
	Dickey-Fuller F	-163.365
		3.79329*10^^-11
Saturn	Statistic	
	Dickey-Fuller F	-130.008
		3.61301*10^^-10
Uranus	Statistic	
	Dickey-Fuller F	-122.162
		6.68008*10^^-10
Neptune	Statistic	
	Dickey-Fuller F	-159.595
		4.7757*10^^-11
Pluto	Statistic	
	Dickey-Fuller F	-124.408
		5.5805*10^^-10

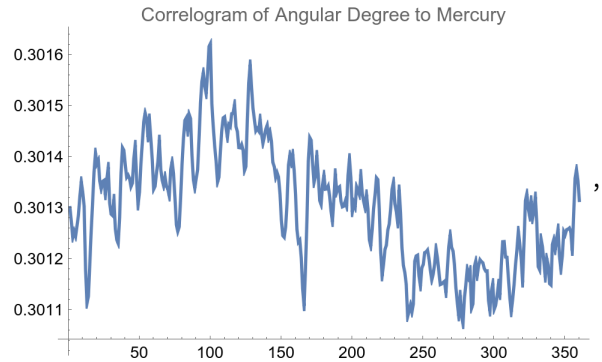
Look at correlograms of filtered data to find hidden rhythms.

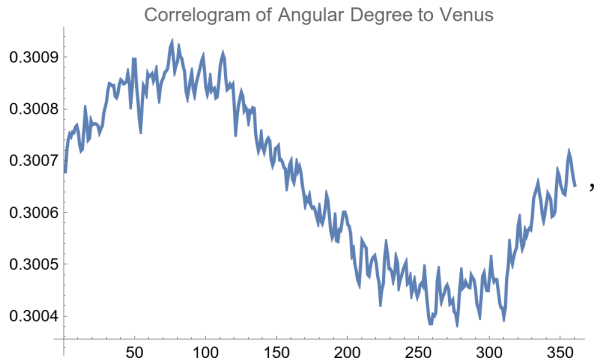
```
corrtable =
 Table[ListLinePlot[ListConvolve[datatable[[j]], datatable[[j]], {1, 1}],
    PlotLabel → "Correlogram of Angular Degree to " <> CommonName[specialpointsentities[[j]]], ImageSize → Medi
  {j, Length[specialpointsentities]}](*SAME AS CORRELOGRAM*)
 (*SUN MERCURY VENUS ARE MOST CLEAN RELATIVE SINUSOIDS VISUALLY*)
```

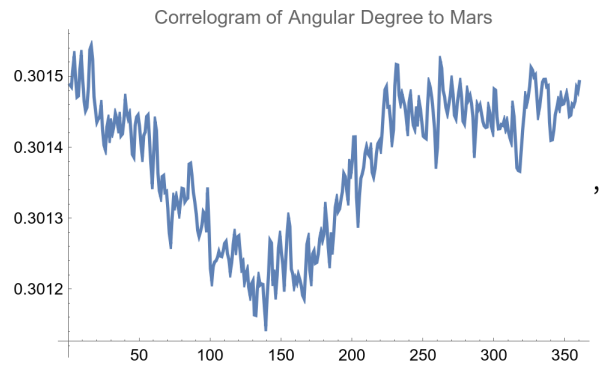

Correlogram of Angular Degree to Mesarthim
0.30240
0.30235
0.30230
0.30225
0.30220
0.30215
0.30210
50
100
150
200
250
300
350

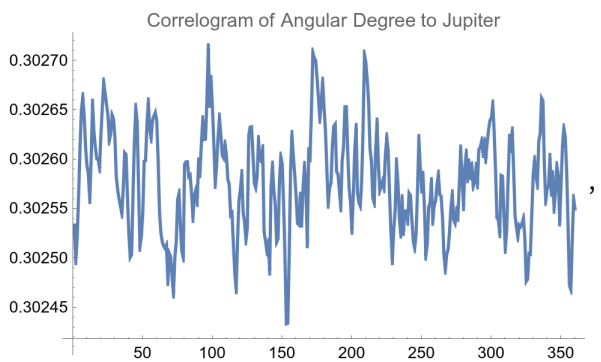

Correlogram of Angular Degree to Sun
0.3012
0.3011
0.3010
0.3009
0.3008
50
100
150
200
250
300
350

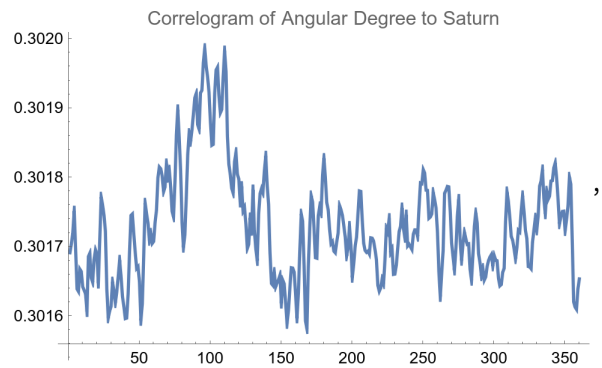

Correlogram of Angular Degree to Moon
0.30200
0.30195
0.30190
0.30185
0.30180
50
100
150
200
250
300
350

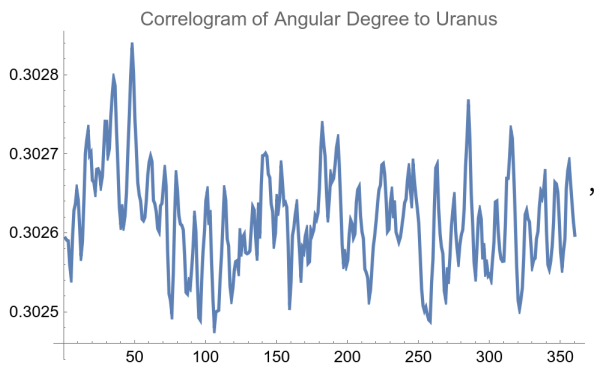

Correlogram of Angular Degree to Mercury
0.3016
0.3015
0.3014
0.3013
0.3012
0.3011
50
100
150
200
250
300
350

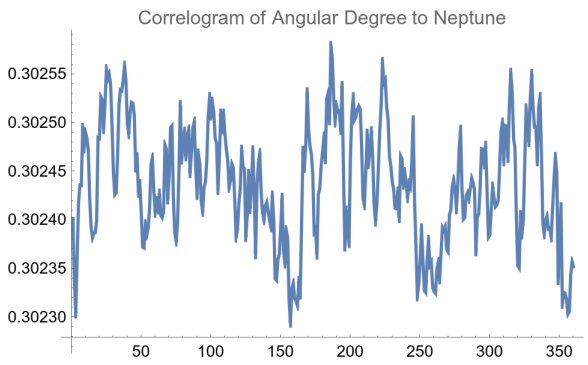

Correlogram of Angular Degree to Venus
0.3009
0.3008
0.3007
0.3006
0.3005
0.3004
50
100
150
200
250
300
350

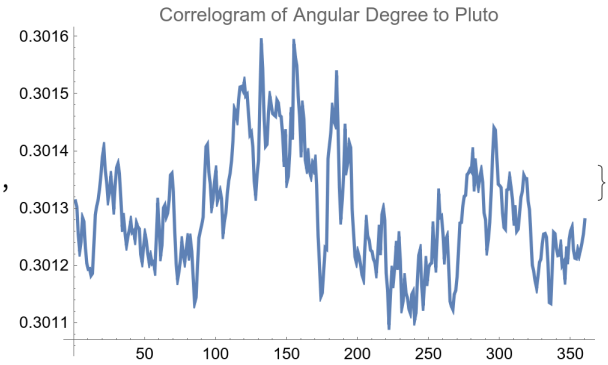

Correlogram of Angular Degree to Mars
0.3015
0.3014
0.3013
0.3012
50
100
150
200
250
300
350


Correlogram of Angular Degree to Jupiter
0.30270
0.30265
0.30260
0.30255
0.30250
0.30245
50
100
150
200
250
300
350


Correlogram of Angular Degree to Saturn
0.3020
0.3019
0.3018
0.3017
0.3016
50
100
150
200
250
300
350


Correlogram of Angular Degree to Uranus
0.3028
0.3027
0.3026
0.3025
50
100
150
200
250
300
350






```
(*Table[Export["correlogram"<>CommonName[specialpointsentities[[i]]]<>".png",corrtable[[i]]],{i,11}]*)
```

Note that Fourier Transforms of filtered data show frequency peaks, the periods of which match the divisors of major astrological angles (trines, squares, quintiles, deciles, Golden angles)

```
maxperiods = {}; maxfreqs = {}; n = 360; Table[f = Abs[Fourier[datatable[[i]]]];
peaksize = Last[TakeLargest[f, 7]]; maxpd = {}; maxfr = {};
 Table[
  peaks = Drop[Flatten[Position[f, x_ /; x ≥ peaksize]], j];
  pos = First[peaks];
  fr = Abs[Fourier[datatable[[i]] Exp[2 Pi I (pos - 2) N[Range[0, n - 1]] / n] (*, FourierParameters→{0,2/n}*)]];
  frpos = Position[fr, Max[fr]][[1, 1]];
  AppendTo[maxfr, frpos];
frpos = Position[fr, Max[fr]][[1, 1]];
  AppendTo[maxpd, N[n / (pos - 2 + 2 (frpos - 1) / n)]], {j, 5}];
 AppendTo[maxfreqs, maxfr];
 AppendTo[maxperiods, maxpd];
 , {i, Length[datatable]}];
```

Power: Infinite expression $\frac{1}{0}$ encountered.

Power: Infinite expression $\frac{1}{0}$ encountered.

Power: Infinite expression $\frac{1}{0}$ encountered.

General: Further output of Power::infy will be suppressed during this calculation.

```
Union[Flatten[maxfreqs]]
```

```
{1, 4, 5, 6, 7, 11, 12, 21, 22, 23, 24, 26, 37, 50, 64,
 300, 314, 327, 338, 340, 341, 342, 343, 352, 353, 357, 358, 359, 360}
```

```
maxfreqs
```

```
{{359, 358, 341, 23, 6}, {1, 357, 340, 24, 7}, {1, 360, 300, 64, 4},
 {1, 343, 338, 26, 21}, {1, 360, 341, 23, 4}, {1, 360, 352, 12, 4}, {358, 353, 314, 50, 11},
 {1, 360, 359, 5, 4}, {360, 359, 327, 37, 5}, {359, 358, 342, 22, 6}, {1, 360, 359, 5, 4}}
```

```
maxperiods
```

```
{{90.2507, 72.2408, 16.4467, 1.0647, 1.01401},
 {ComplexInfinity, 60.223, 15.732, 1.06784, 1.01685}, {ComplexInfinity, 120.223, 5.74519, 1.21069, 1.00836},
 {ComplexInfinity, 18.0905, 14.474, 1.07418, 1.05848}, {ComplexInfinity, 120.223, 16.4467, 1.0647, 1.00836},
 {ComplexInfinity, 120.223, 32.8767, 1.03134, 1.00836}, {72.2408, 36.1607, 7.3863, 1.15654, 1.02841},
 {ComplexInfinity, 120.223, 90.2507, 1.01117, 1.00836}, {120.223, 90.2507, 10.0527, 1.11043, 1.01117},
 {90.2507, 72.2408, 17.2295, 1.06158, 1.01401}, {ComplexInfinity, 120.223, 90.2507, 1.01117, 1.00836}}
```

```
Union[Flatten[maxperiods]]
```

```
{1.0083562858876802`, 1.0111728356532053`, 1.0140051639151866`, 1.0168534036343093`, 1.0284081891763213`,
 1.0313380337731375`, 1.0584776216922573`, 1.0615815599351255`, 1.0647037560382504`, 1.0678443715702914`,
 1.0741815167840862`, 1.1104256631708822`, 1.156543932606329`, 1.2106944677988902`, 5.745190176434081`,
 7.386298871537672`, 10.052745888923363`, 14.473978110341747`, 15.7319737800437`, 16.446700507614214`,
 17.229460249933528`, 18.09045226130653`, 32.87671232876713`, 36.160714285714285`, 60.22304832713755`,
 72.24080267558529`, 90.25069637883009`, 120.22263450834879`, ComplexInfinity}
```

```
Union[Flatten[Round[maxperiods]]]
```

```
{1, 6, 7, 10, 14, 16, 17, 18, 33, 36, 60, 72, 90, 120, ComplexInfinity}
```

```
1 - 0.381966
```

```
0.618034
```

```
180 * (0.236)(*Golden Angle 1*)
```

```
42.48
```

```
Divisors[42]
```

```
{1, 2, 3, 6, 7, 14, 21, 42}
```

```
180 * (1 - 0.381966)(*Golden Angle 2*)
```

```
111.246
```

```
Divisors[111]
```

```
{1, 3, 37, 111}
```

```
180 * (0.381966)(*Golden Angle 3*)
```

```
68.7539
```

```
Divisors[68]
```

```
{1, 2, 4, 17, 34, 68}
```

```
TableForm[
 ReplaceAll[
  Transpose[{CommonName[specialpointsentities], Transpose[{Table[Union[Round[maxperiods[[i]]]], {i, 11}]}]}]
  ComplexInfinity → ""]](*ignore the complex infinities representing 1/0 as artefact of code *)
```

Mesarthim	1 16 72 90
Sun	1 16 60
Moon	1 6 120
Mercury	1 14 18
Venus	1 16 120
Mars	1 33 120
Jupiter	1 7 36 72
Saturn	1 90 120
Uranus	1 10 90 120
Neptune	1 17 72 90
Pluto	1 90 120

Astrologically conventional natures and orbs are given in https://www.astro.com/astrology/in_aspect_e.htm.

```
(*Dataset*)
fouriertable =
 TableForm[{{Style["Dominant Wave Period in Degrees", Bold], Style["Related Astrological Angle(s)", Bold],
    Style["Special Point Contributor", Bold], Style["Classical Nature", Bold],
    Style["Classical Orb in Degrees", Bold]}, {"1", "All", "All eleven", "Not given", "0 assumed"},
   {"6", "Golden Angle 1", "Moon", "Not given", "Not given"},
   {"7", "Golden Angle 3", "Jupiter", "Not given", "Not given"},
   {"10", "Golden Angle 2", "Uranus", "Not given", "Not given"},
   {"14", "Golden Angle 1", "Mercury", "Not given", "Not given"},
   {"16", "Golden Angle 3", "Mesarthim, Sun, & Venus", "Not given", "Not given"},
   {"17", "Golden Angles 1 & 3", "Neptune & Mercury", "Not given", "Not given"},
   {"33", "Golden Angle 3", "Mars", "Not given", "Not given"},
   {"36", "Decile", "Jupiter", "Weakly harmonious", "0 to 1"}, {"60", "Sextile", "Sun", "Harmonious", "5"},
   {"72", "Quintile", "Mesarthim, Jupiter, & Neptune", "Harmonious", "0 to 1"},
   {"90", "Square", "Mesarthim, Saturn, Uranus, Neptune & Pluto", "Disharmonious", "0 to 9"},
   {"120", "Trine", "Moon, Venus, Mars, Saturn, Uranus, & Pluto", "Harmonious", "0 to 9"}}(*,ItemSize→302*)
```

Dominant Wave Period in Degrees	Related Astrological Angle(s)	Special Point Contributor	Classical Nature	Classical Orb in Degrees
1	All	All eleven	Not given	0 assumed
6	Golden Angle 1	Moon	Not given	Not given
7	Golden Angle 3	Jupiter	Not given	Not given
10	Golden Angle 2	Uranus	Not given	Not given
14	Golden Angle 1	Mercury	Not given	Not given
16	Golden Angle 3	Mesarthim, Sun, & Venus	Not given	Not given
17	Golden Angles 1 & 3	Neptune & Mercury	Not given	Not given
33	Golden Angle 3	Mars	Not given	Not given
36	Decile	Jupiter	Weakly harmonious	0 to 1
60	Sextile	Sun	Harmonious	5
72	Quintile	Mesarthim, Jupiter, & Neptune	Harmonious	0 to 1
90	Square	Mesarthim, Saturn, Uranus, Neptune & Pluto	Disharmonious	0 to 9
120	Trine	Moon, Venus, Mars, Saturn, Uranus, & Pluto	Harmonious	0 to 9

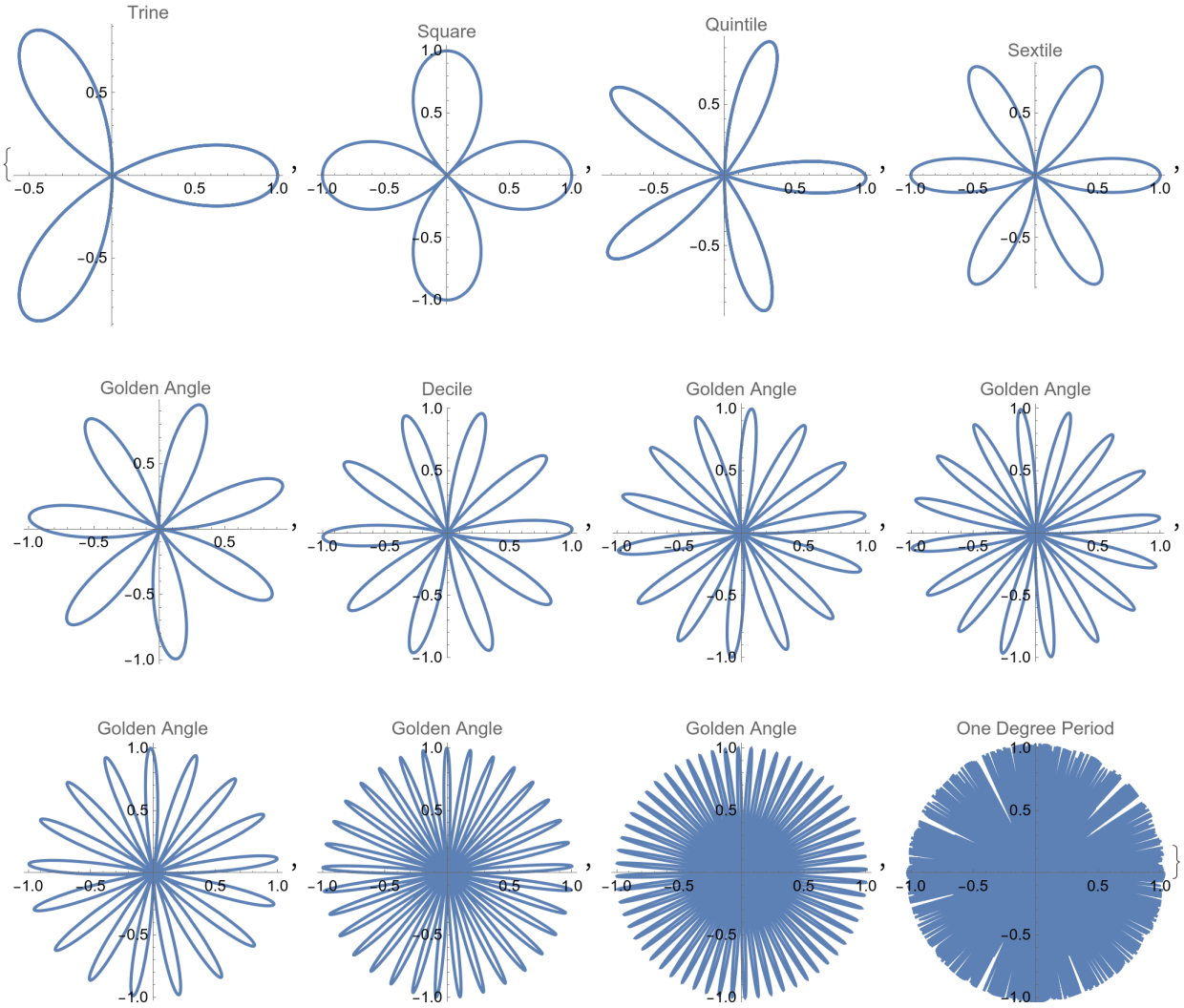
```
(*Export["fouriertable.png",fouriertable]*)
```

Every special point contributes something . Now, let's see the effect of the waves individually and then see their collective effect by adding them.

```
Length[FindPeaks[Table[0.5 + 0.5 Sin[360 x(*-360Degree*)], {x, 1 Degree, 360 Degree, .0001 Degree}]]]
```

```
360
```

```
polartable = {PolarPlot[Sin[3 x + 90 Degree], {x, 0 Degree, 359 Degree}, ImageSize → Small, PlotLabel → "Trine"]
  (*Trine*), PolarPlot[Sin[(2 x) - 90 Degree], {x, 0 Degree, 359 Degree}, ImageSize → Small, PlotLabel → "Square'
  (*Square*), PolarPlot[Sin[5 x + (60 + 180 / 5) Degree], {x, 0 Degree, 360 Degree}, ImageSize → Small,
   PlotLabel → "Quintile"](*Quintile*),
  PolarPlot[(0.5 + 0.5 Sin[6 x + (30 + 360 / 6) Degree]), {x, 0 Degree, 360 Degree}, ImageSize → Small,
   PlotLabel → "Sextile"](*Sextile*),
  PolarPlot[0.5 + 0.5 Sin[7 x - (360 / 7) Degree], {x, 0 Degree, 360 Degree}, ImageSize → Small,
   PlotLabel → "Golden Angle"](*Golden Angle*),
  PolarPlot[(0.5 + 0.5 Sin[10 x + 72 Degree]), {x, 0 Degree, 360 Degree}, ImageSize → Small, PlotLabel → "Decile"]
  (*Decile*),
  PolarPlot[0.5 + 0.5 Sin[14 x - (360 / 14) Degree], {x, 0 Degree, 360 Degree}, PlotLabel → "Golden Angle",
   ImageSize → Small](*Golden Angle*),
  PolarPlot[0.5 + 0.5 Sin[16 x - (360 / 16) Degree], {x, 0 Degree, 360 Degree}, PlotLabel → "Golden Angle",
   ImageSize → Small](*Golden Angle*),
  PolarPlot[0.5 + 0.5 Sin[17 x - (360 / 17) Degree], {x, 0 Degree, 360 Degree}, PlotLabel → "Golden Angle",
   ImageSize → Small](*Golden Angle*),
  PolarPlot[0.5 + 0.5 Sin[33 x - ((*33+*)360 / 33) Degree], {x, 0 Degree, 360 Degree}, ImageSize → Small,
   PlotLabel → "Golden Angle"](*Golden Angle*),
  PolarPlot[0.5 + 0.5 Sin[60 x - (*72*)6 Degree], {x, 0 Degree, 360 Degree}, ImageSize → Small,
   PlotLabel → "Golden Angle"](*Golden Angle*),
  PolarPlot[0.5 + 0.5 Sin[360 x(*-360Degree*)], {x, 0 Degree, 360 Degree}, ImageSize → Small,
   PlotLabel → "One Degree Period"](*1 degree period*)}
```



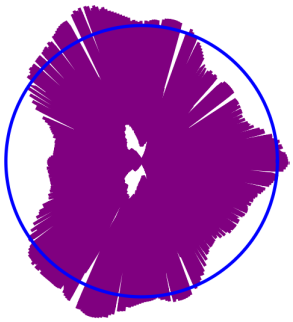

```
(*Table[
 Export[
  "polargraph"<>{"trine","square","quintile","sextile","GA7","decile","GA14","GA16","GA17","GA33",
     "GA60","GA360"}[[i]]<>".png",polartable[[i]],{i,12}]*)
```

Golden angles look like forms in nature, like daisies, in contrast to the stiffer aesthetics of the major astrological angles.

Note that zero degrees is to the right in default mathematics, whereas in astrology zero degrees tends to be to the left. Reflecting this fact, the final addition of these waves will be rotated to the left below.

When you add the main angles together (weighing them by multiplying by the number of planets represented and skipping the Golden angles and Mesarthim for now) with an appropriately sized reference circle for convenience, you get something like the famous Gauquelin sectors image.

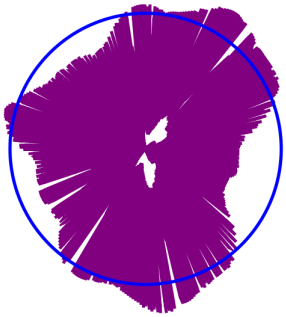
```
PolarPlot[
 {10 * 7 (0.5 + 0.5 Sin[360 x (*-360Degree*)]) (*1 degree period*) + 2 * 4 (0.5 + 0.5 Sin[10 x + 72 Degree])
   (*Decile*) + 2 * 2 (Sin[5 x + (60 + 180 / 5) Degree (*(20 + 360/5) Degree*)]) (*Quintile*) +
   1 * 4 (0.5 + 0.5 Sin[6 x + (30 + 360 / 6) Degree]) (*Sextile*) + 4 * 3 Sin[2 x - 90 Degree] (*Square*) +
   6 * 2 Sin[3 x + 90 Degree] (*Trine*), 82}, {x, 0 Degree, 360 Degree}, Axes → {False, False},
 PlotStyle → {Purple, Blue}, PolarAxes → {False, False}, Frame → {{False, False}, {False, False}},
 ImageSize → Small]
```



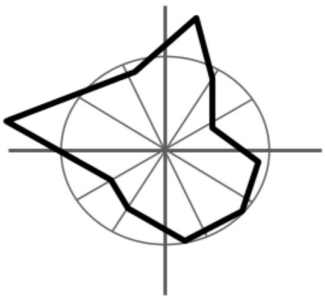
Now, rotate to match the default mathematical angular presentation to that for a Tropical astrological chart.

(Note the holes in the butterfly. These are areas of very small degree change in which there would be expected to be no news activity. In an imaginative sense, this image is like the brainstem and two hemispheres of the brain. There is even a butterfly caudate. This simile would not be the first time the brain is compared to the cosmos. See for example https://phys.org/news/2020-11-human-brain-resemble-universe.html)

```
Rotate[
 PolarPlot[{10 * 7 (0.5 + 0.5 Sin[360 x (*-360Degree*)]) (*1 degree period*) + 2 * 4 (0.5 + 0.5 Sin[10 x + 72 Degree])
    (*Decile*) + 2 * 2 (Sin[5 x + (60 + 180 / 5) Degree (*(20 + 360/5) Degree*)]) (*Quintile*) +
    1 * 4 (0.5 + 0.5 Sin[6 x + (30 + 360 / 6) Degree]) (*Sextile*) + 4 * 3 Sin[2 x - 90 Degree] (*Square*) +
    6 * 2 Sin[3 x + 90 Degree] (*Trine*), 82}, {x, 0 Degree, 360 Degree}, Axes → {False, False},
  PlotStyle → {Purple, Blue}, PolarAxes → {False, False}, Frame → {{False, False}, {False, False}},
  ImageSize → Small], (180 - 15) Degree]
```



Compare to the Gauquelin sectors chart below which is in the standard Tropical chart format. (Image at https://newalchemypress.com/gauquelin/gauquelin_docs/images/4e.jpg. See https://newalchemypress.com/gauquelin/ for more information.)



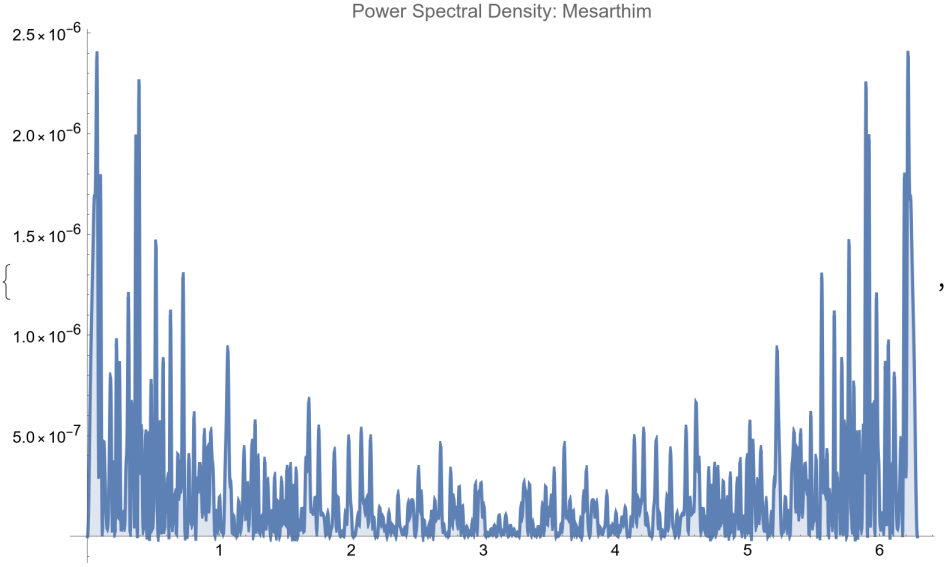
Not a perfect match, but certainly food for thought. Perhaps the difference is that there was not sufficient data for the Gauquelin data.

More advanced wave analysis

Look at power spectral densities of filtered data to visually see peak frequencies at a glance.

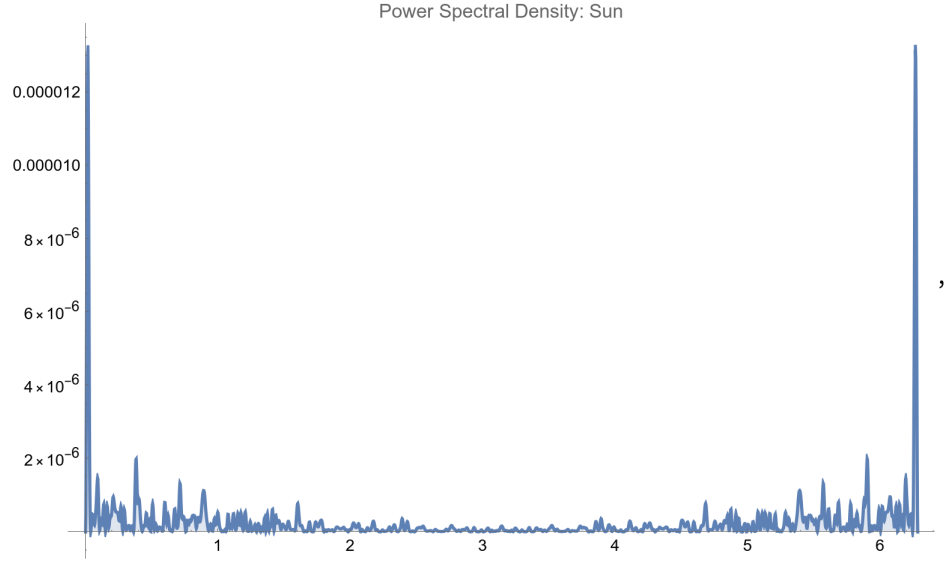
```
psdtable = Table[Plot[PowerSpectralDensity[TimeSeries[datatable[[j]]], ω, FourierParameters → {-1, 1}],
    {ω, 0, 2 Pi}, Filling → Axis, PlotRange → All, ImageSize → Large,
    PlotLabel → "Power Spectral Density: " <> CommonName[specialpointsentities[[j]]], PlotRange → Full,
    PlotRange → {{0, 0.00002}, {0, 0.00002}}, PlotRangeClipping → False], {j, Length[specialpointsentities]}]
  (*SUN MERCURY VENUS ARE highest MAXIMUM frequencies (all benefics); MARS,
 SATURN, & PLUTO ARE SECOND (all malefics):
  perhaps this is the difference between articles that are good news vs. bad news; at the very least,
 this offers a new hypothesis and avenue for subsequent study,
 namely classifying the articles as favorable or unfavorable,
 grouping them thus and seeing if there are different sets of peak frequencies in each group
  that make sense astrologically*)
```

Power Spectral Density: Mesarthim



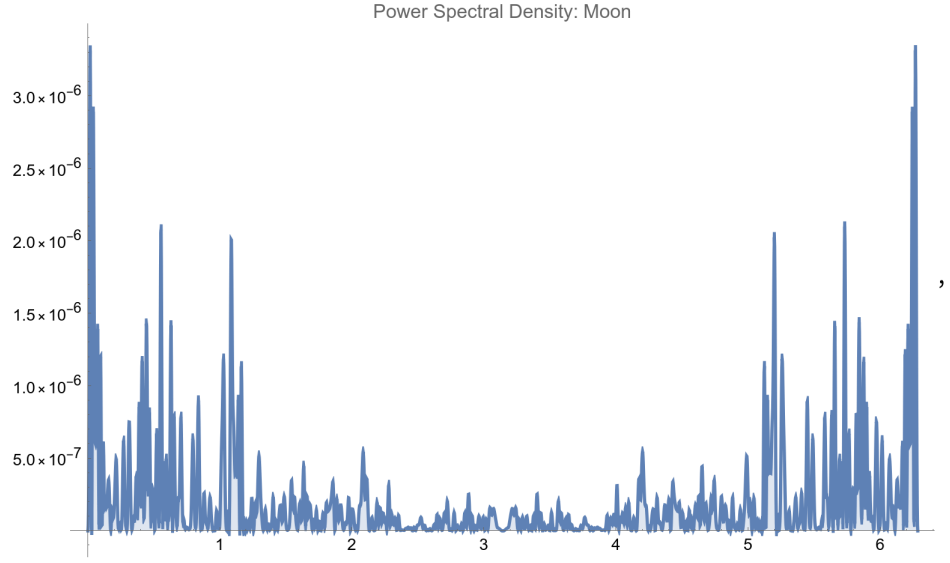
,

Power Spectral Density: Sun



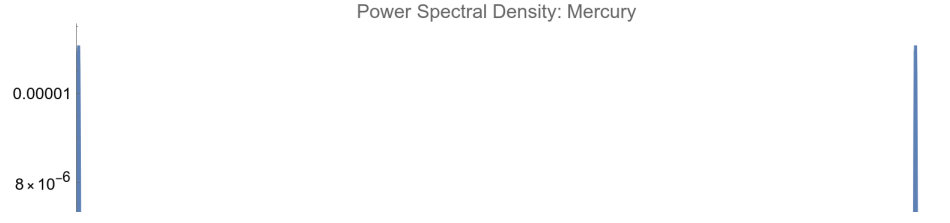
,

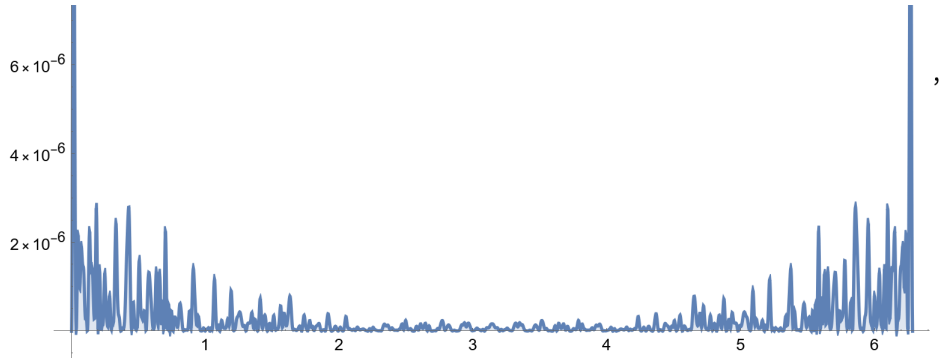
Power Spectral Density: Moon



,

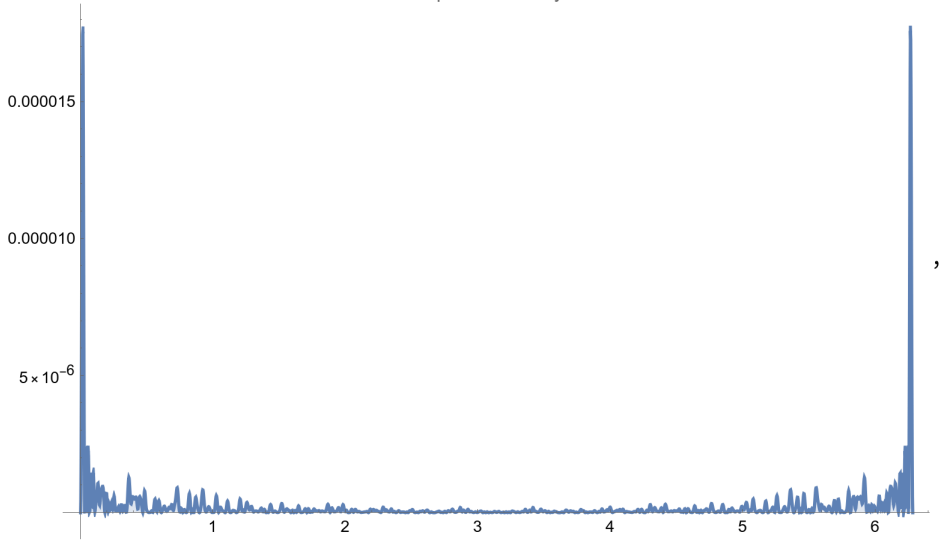
Power Spectral Density: Mercury





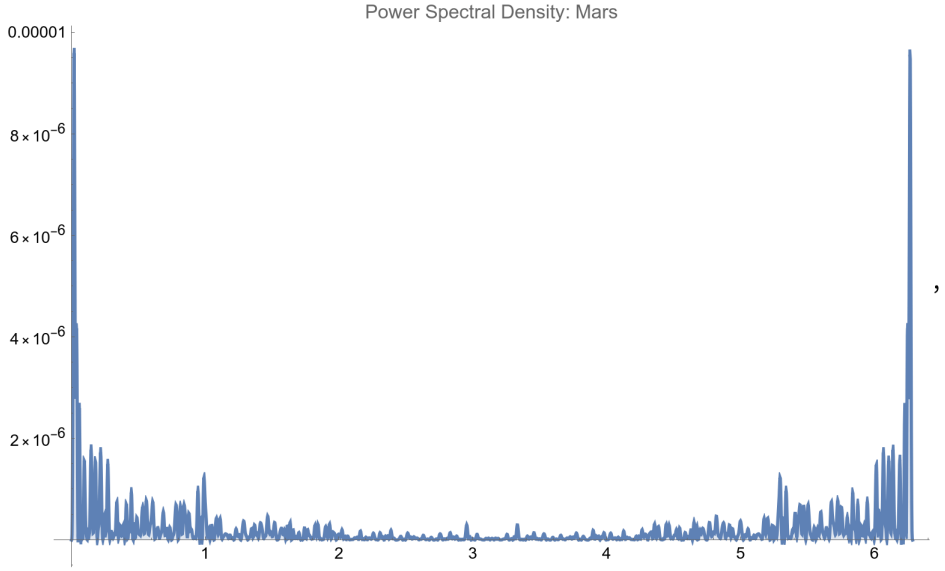
,

Power Spectral Density: Venus



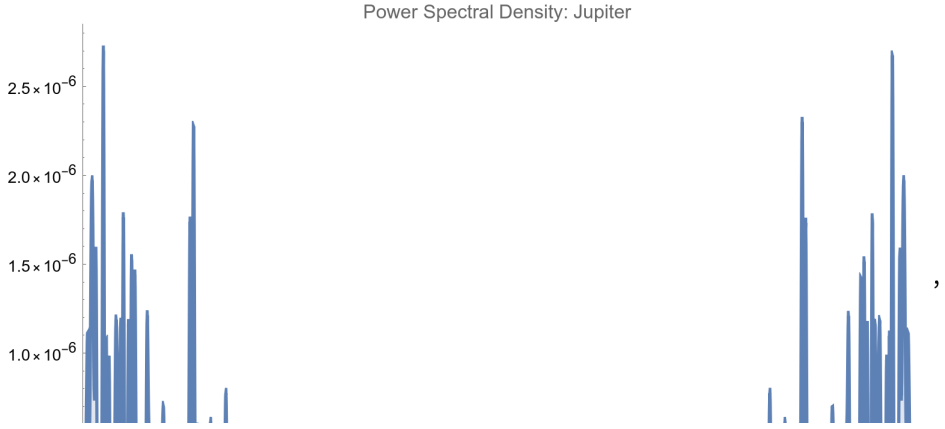
,

Power Spectral Density: Mars

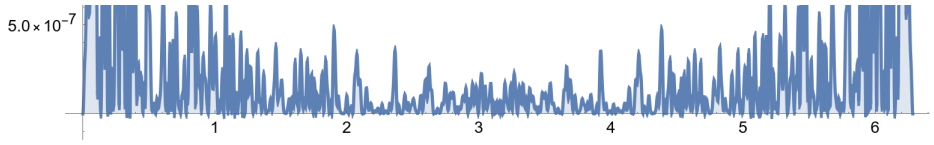


,

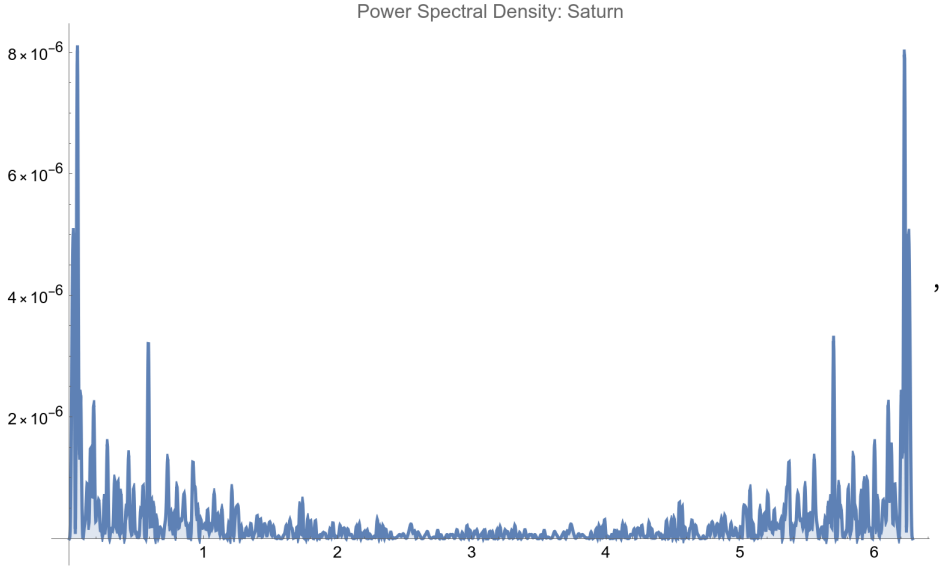
Power Spectral Density: Jupiter



,

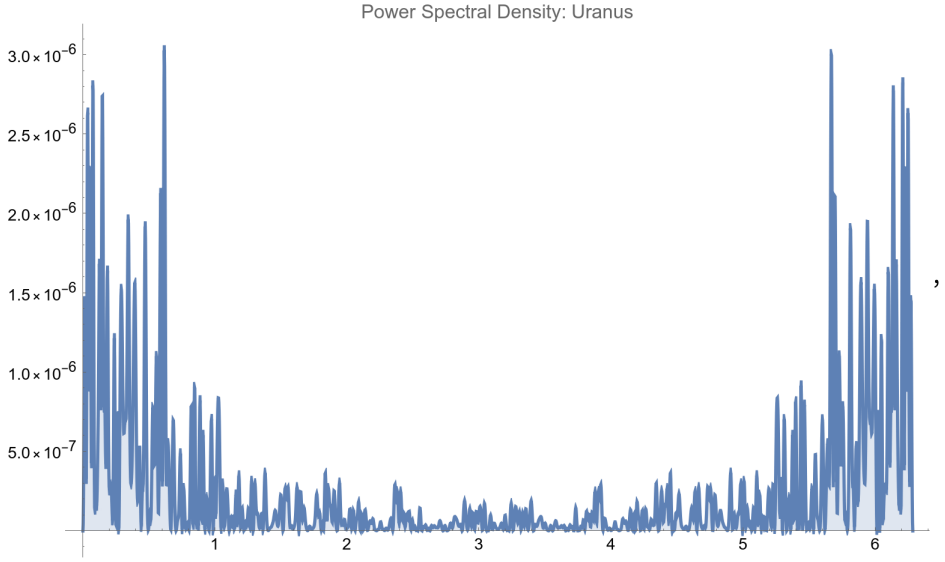


Power Spectral Density: Saturn



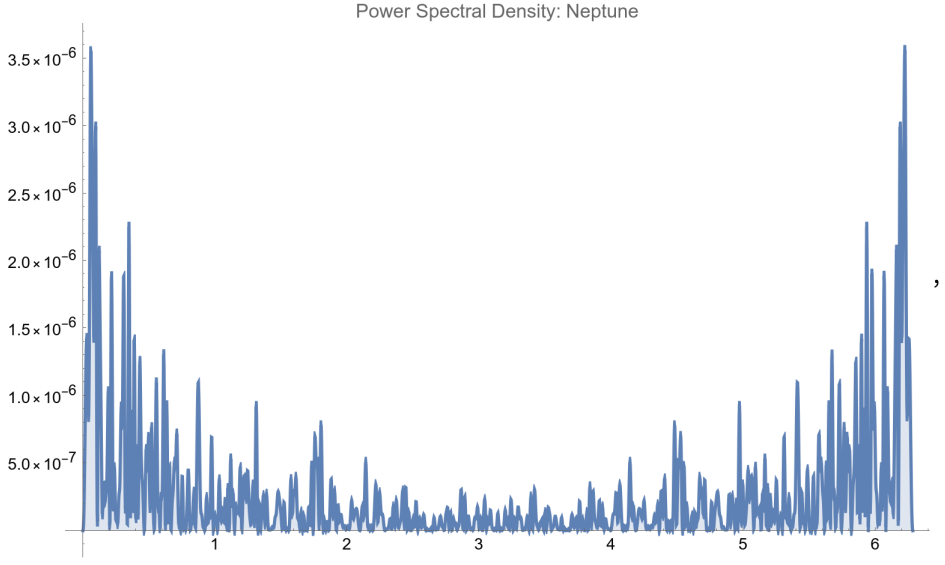
,

Power Spectral Density: Uranus



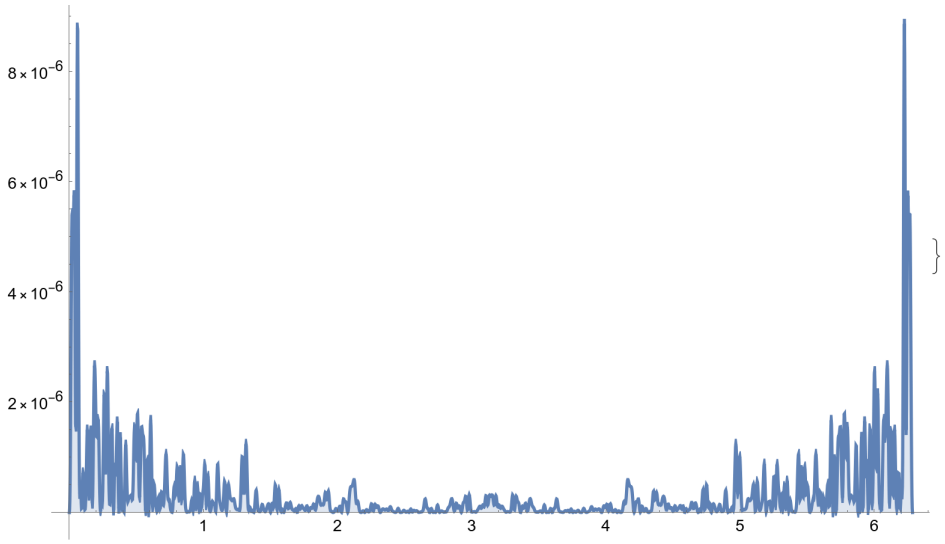
,

Power Spectral Density: Neptune



,

Power Spectral Density: Pluto




```
(*Table[Export["PSD"<>CommonName[specialpointsentities[[i]]]<>".png",psdtable[[i]]],{i,11}]*)
```

Create an ACF (autocorrelation function) plot with confidence bands as confirmation of complete list of periodicities that are beyond white noise with 95% confidence.

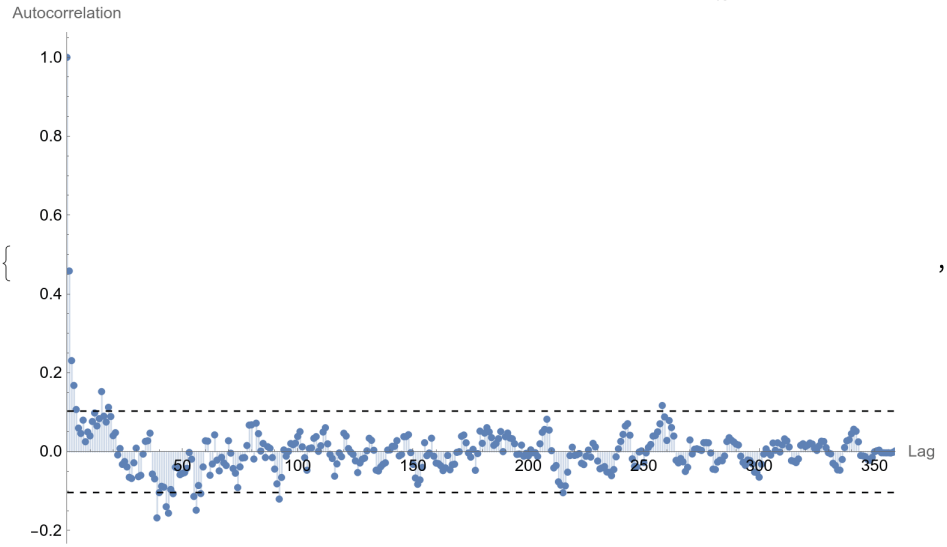
```
acf[data_, lmax_, k_, clev_ : 0.95] :=
 Show[ListPlot[CorrelationFunction[data, {0, lmax}], Filling → Axis, PlotRange → {{0, lmax}, All},
   PlotStyle → PointSize[Medium],
   PlotLabel → "Minor Planet Distance to " <> CommonName[specialpointsentities[[k]]] <>
     " Autocorrelation with 95% CI"(*<>
    ToString[
     Union[Abs[(Quantile[NormalDistribution[],{(1-clev)/2,1-(1-clev)/2}]/Sqrt[data["PathLengths"][[1]]])]][
      1]]*), ImageSize → Large, AxesLabel → {"Lag", "Autocorrelation"}],
  Graphics[{Dashed, Line[{{0, #}, {lmax, #}}]}] & /@
   (Quantile[NormalDistribution[], {(1 - clev) / 2, 1 - (1 - clev) / 2}] / Sqrt[data["PathLengths"][[1]]])]
```

```
Union[
  Abs[(Quantile[NormalDistribution[], {(1 - 0.95) / 2, 1 - (1 - 0.95) / 2}] /
     Sqrt[TimeSeries[datatable[[1]]]["PathLengths"][[1]]])]][[1]]
```

```
0.103299
```

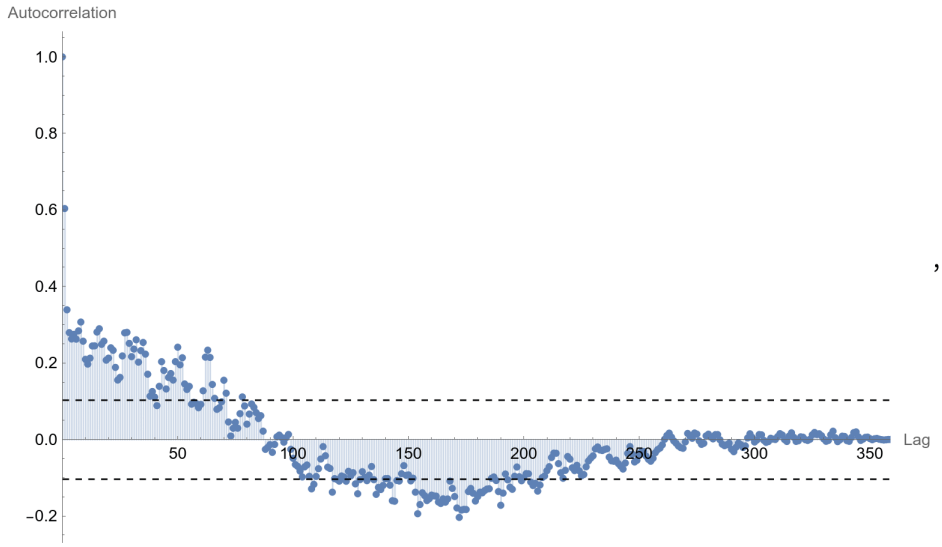
```
acftable = Table[acf[TimeSeries[datatable[[j]]], 359, j, .95], {j, Length[specialpointsentities]}]
```

Minor Planet Distance to Mesarthim Autocorrelation with 95% CI



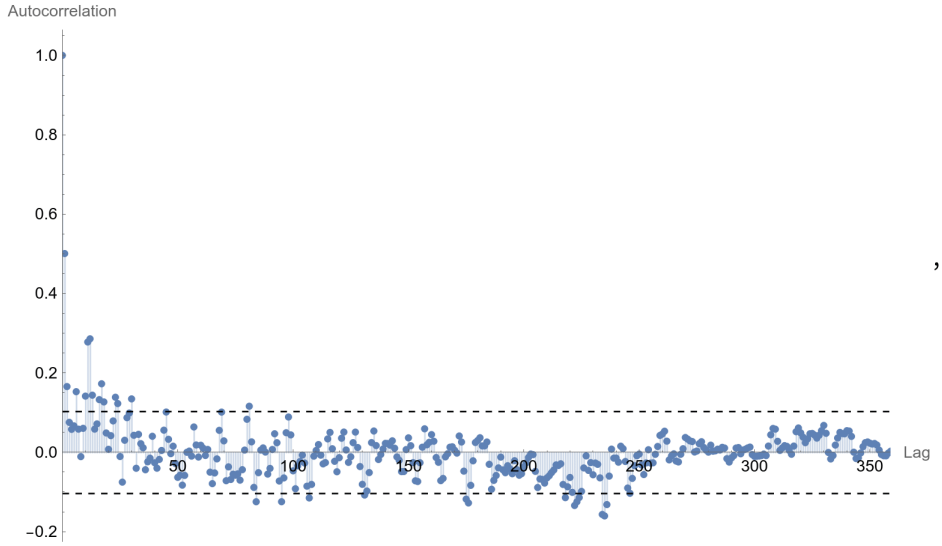
{ ,

Minor Planet Distance to Sun Autocorrelation with 95% CI



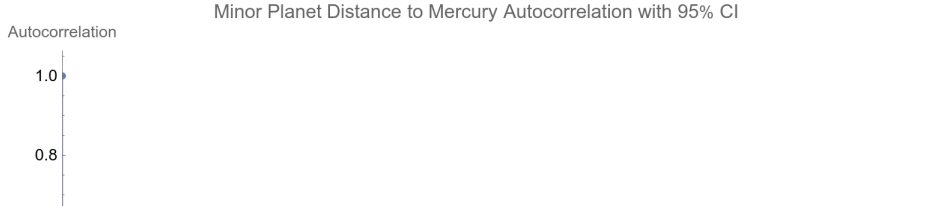
,

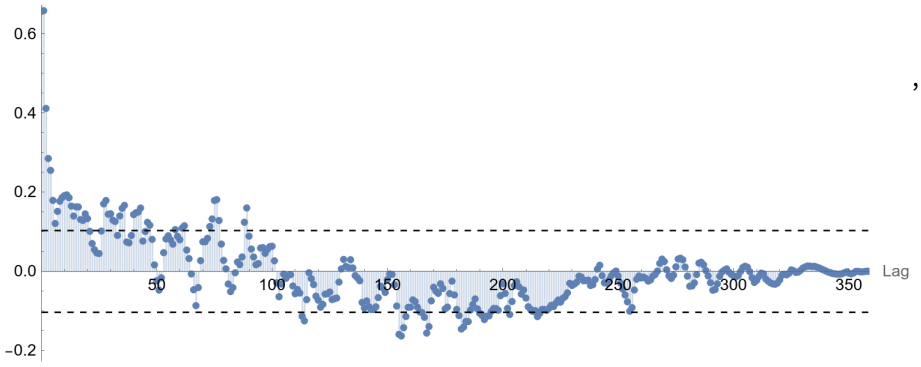
Minor Planet Distance to Moon Autocorrelation with 95% CI



,

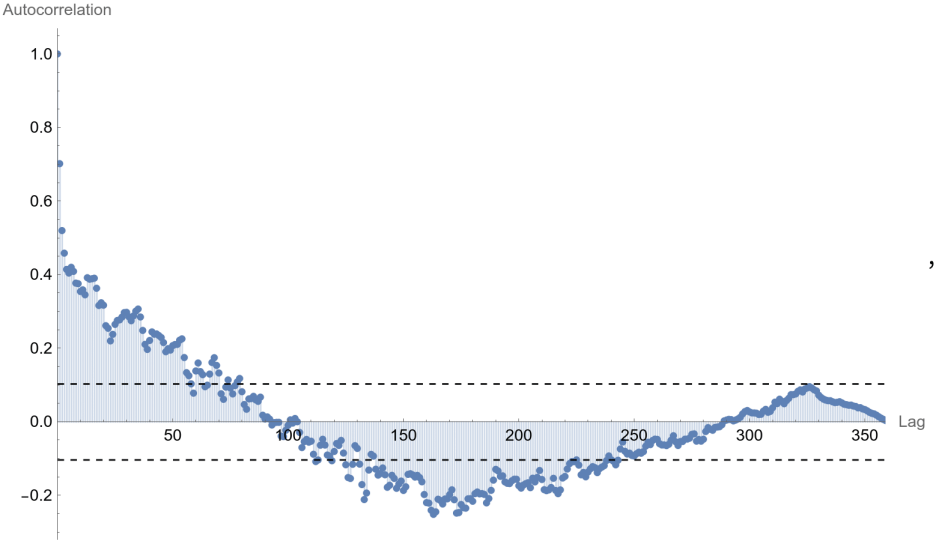
Minor Planet Distance to Mercury Autocorrelation with 95% CI





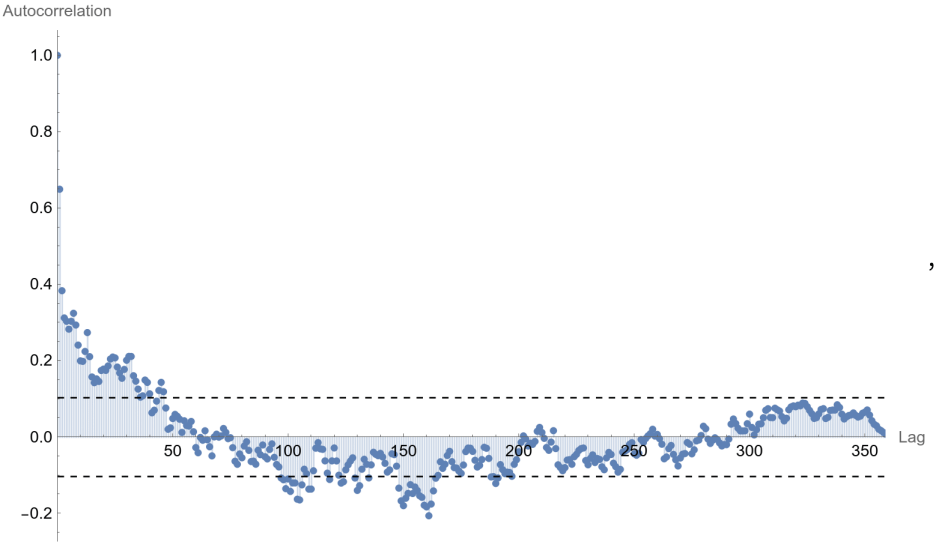
,

Minor Planet Distance to Venus Autocorrelation with 95% CI



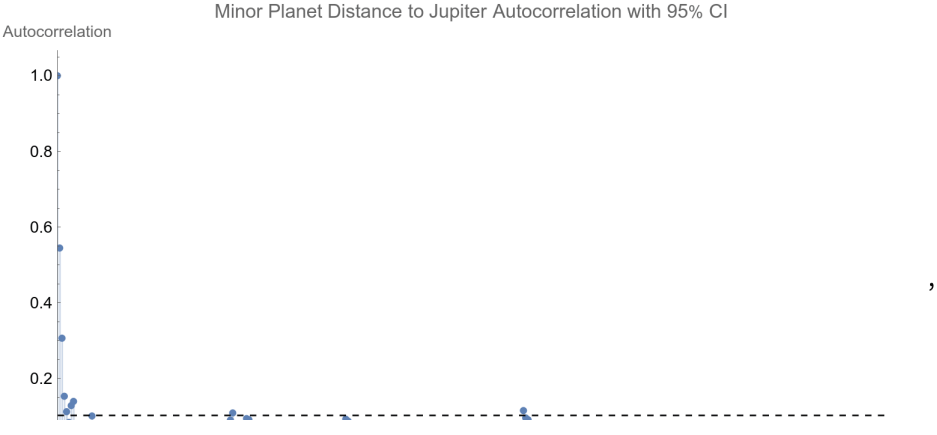
,

Minor Planet Distance to Mars Autocorrelation with 95% CI

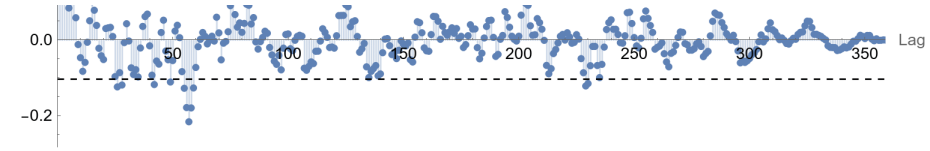


,

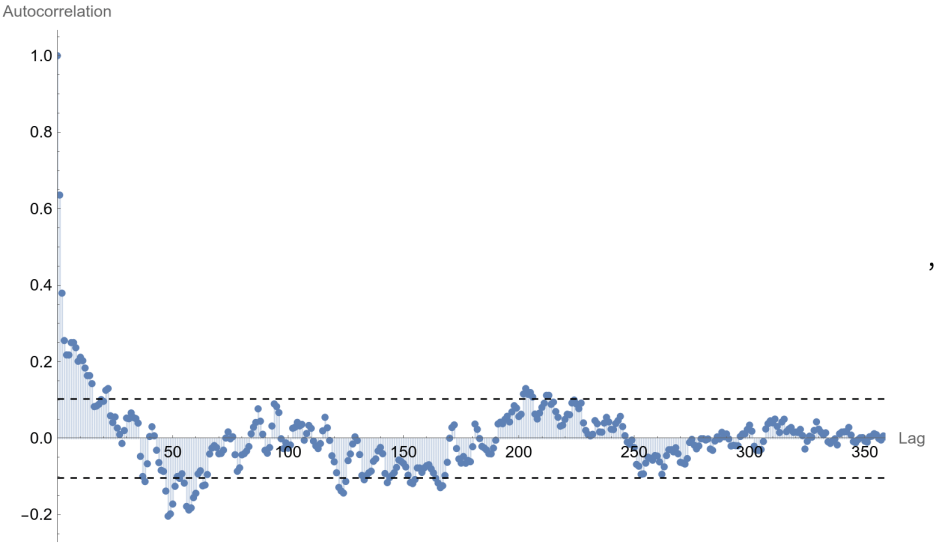
Minor Planet Distance to Jupiter Autocorrelation with 95% CI



,

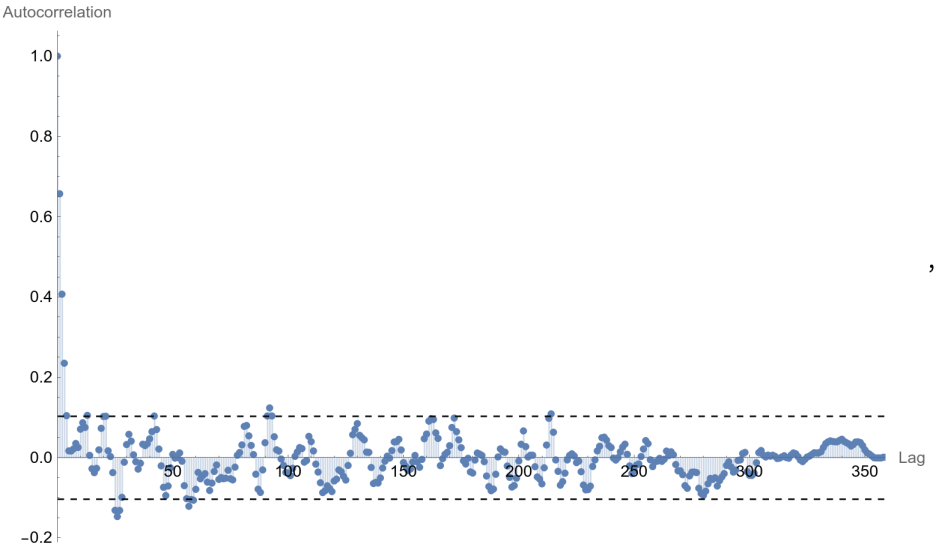


Minor Planet Distance to Saturn Autocorrelation with 95% CI



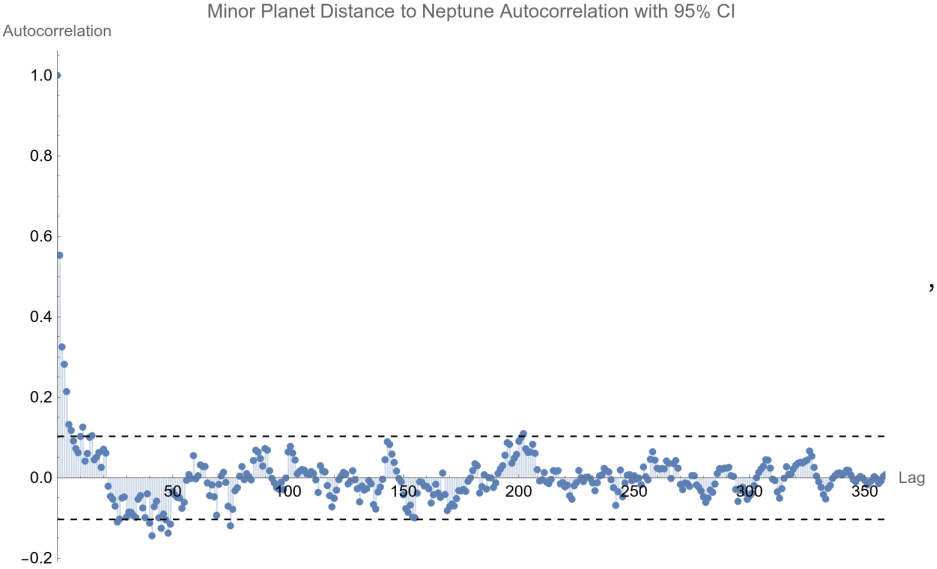
,

Minor Planet Distance to Uranus Autocorrelation with 95% CI



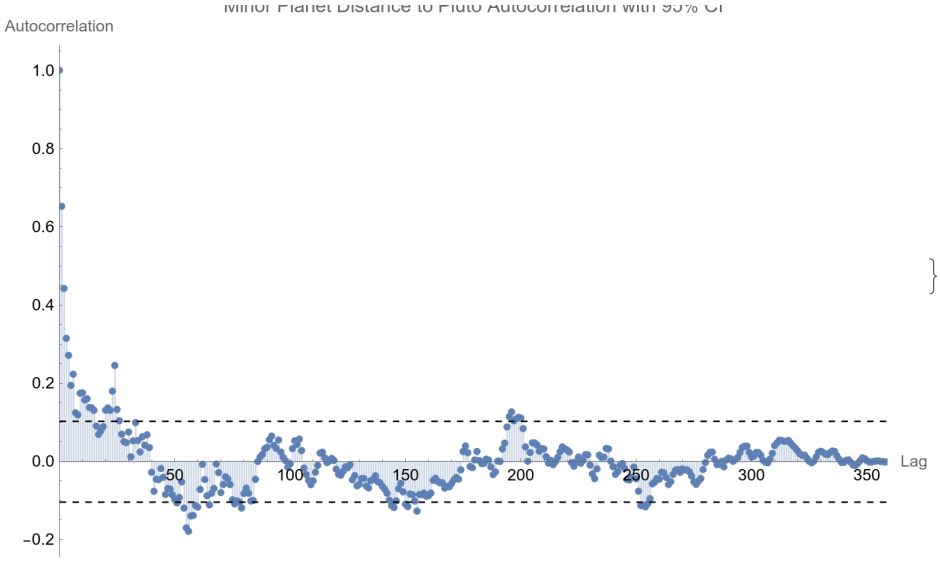
,

Minor Planet Distance to Neptune Autocorrelation with 95% CI



,

Minor Planet Distance to Pluto Autocorrelation with 95% CI




```
(*Table[Export["ACF"<>CommonName[specialpointsentities[[i]]<>".png",acftable[[i]],{i,11}]]*)
```

```
tl = Table[Cases[CorrelationFunction[datatable[[i]], {0, 359}], x_ /; Abs[x] > 0.103299], {i, 11}];
```

```
Length[tl]
```

```
11
```

```
pos = Table[Position[CorrelationFunction[datatable[[i]], {0, 359}], tl[[i, j]]][[1, 1]], {i, 11}, {j, 1, Length[tl[[i
```

```
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```

```
posgroups = Table[Split[pos[[i]], #2 - #1 == 1 &], {i, 11}]
```

```
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```
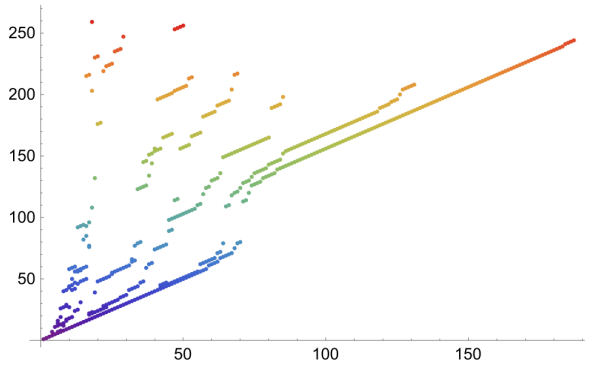

```
ListPlot[pos, ColorFunction → "Rainbow"]
```




```
TableForm[Transpose[{CommonName[specialpointsentities], Transpose[{pos}]}]]
```

Mesarthim	1 2 3 4 5 16 19 40 41 44 45 47 56 57 59 93 216 259
Sun	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 43 44 45 46 47 48 49 50 51 52 53 54 55 56 62 63 64 65 66 67 71 72 79 109 110 118 120 121 124 128 129 130 133 136 13
Moon	1 2 3 7 11 12 13 14 17 18 19 24 25 31 82 85 96 108 132 176 177 219 223 224 225 235 236 237 247
Mercury	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 28 29 30 31 32 33 35 36 37 41 42 43 44 47 48 59 62 63 74 75 76 77 78 89 90 114 115 156 157 158 159 166 167 168 169 182 183 184 185 186 191 192 193 194 195 204 216 217
Venus	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 61 62 63 64 67 68 69 70 71 75 79 80 113 114 120 126 127 128 129 1
Mars	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 45 46 47 98 99 100 101 102 103 104 105 106 107 110 111 119 124 125 130 131 132 136 149 150 151 152 153 154 155 1
Jupiter	1 2 3 4 5 7 8 27 29 43 50 56 57 58 59 60 77 203 230 231
Saturn	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 22 23 39 48 49 50 51 52 54 56 57 58 59 60 61 64 65 123 124 125 126 134 144 154 155 156 165 166 167 168 203 204 205 206 207 213 214
Uranus	1 2 3 4 5 14 26 27 28 58 59 60 92 93 94 215
Neptune	1 2 3 4 5 6 7 12 16 27 41 42 46 48 49 50 76 203
Pluto	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 21 22 23 24 25 26 27 52 55 56 57 58 59 60 61 66 77 79 80 145 146 151 152 156 196 197 198 199 200 201 253 254 255 256

```
TableForm[Transpose[{CommonName[specialpointsentities], posgroups}]]
```

Mesarthim	1	2	3	4 5
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	19			
	40	41		
	44	45		
	47			
	56	57		
	59			
	93			
	216			

	259
Sun	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
	43 44 45 46 47 48 49 50 51 52 53 54 55 56
	62 63 64 65 66 67
	71 72
	79
	109 110
	118
	120 121
	124
	128 129 130
	133
	136 137 138 139 140
	143 144 145 146 147
	152
	154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186
	189 190 191 192
	194 195 196
	200
	204 205 206 207 208
Moon	1 2 3
	7
	11 12 13 14
	17 18 19
	24 25
	31
	82
	85
	96
	108
	132
	176 177
	219
	223 224 225
	235 236 237
	247
Mercury	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
	28 29 30 31 32 33
	35 36 37
	41 42 43 44
	47 48
	59
	62 63
	74 75 76 77 78
	89 90
	114 115
	156 157 158 159
	166 167 168 169
	182 183 184 185 186
	191 192 193 194 195
	204
	216 217
Venus	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55
	61 62 63 64
	67 68 69 70 71
	75
	79 80
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	120
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	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 19
	241 242 243 244
Mars	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
	45 46 47
	98 99 100 101 102 103 104 105 106 107
	110 111
	119
	124 125
	130 131 132
	136
	149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165
	189 190 191 192
	198
Jupiter	1 2 3 4 5
	7 8
	27
	29
	43
	50
	56 57 58 59 60
	77
	203
	230 231
Saturn	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
	22 23
	39
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	54
	56 57 58 59 60 61
	64 65
	123 124 125 126
	134
	144
	154 155 156
	165 166 167 168
	203 204 205 206 207
	213 214
Uranus	1 2 3 4 5
	14
	26 27 28
	58 59 60
	92 93 94
	215
Neptune	1 2 3 4 5 6 7
	12
	16
	27
	41 42
	46
	48 49 50
	76
	203
Pluto	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
	21 22 23 24 25 26 27
	52
	55 56 57 58 59 60 61
	66
	77
	79 80
	145 146
	151 152
	156
	196 197 198 199 200 201

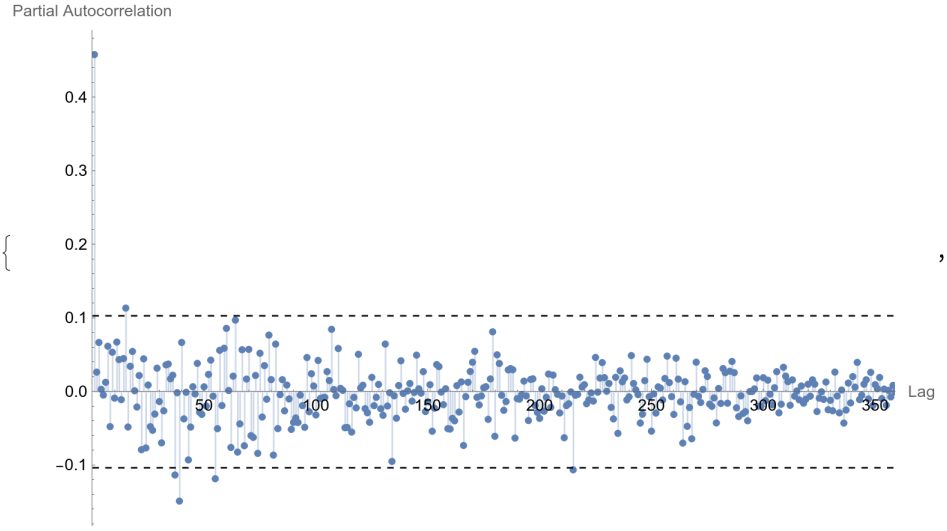
253 254 255 256

For completion's sake, create a PACF (partial autocorrelation function) plot with white-noise confidence bands to see the complete list of periodicities that do not rely on others to boost them that are beyond white noise with 95% confidence.

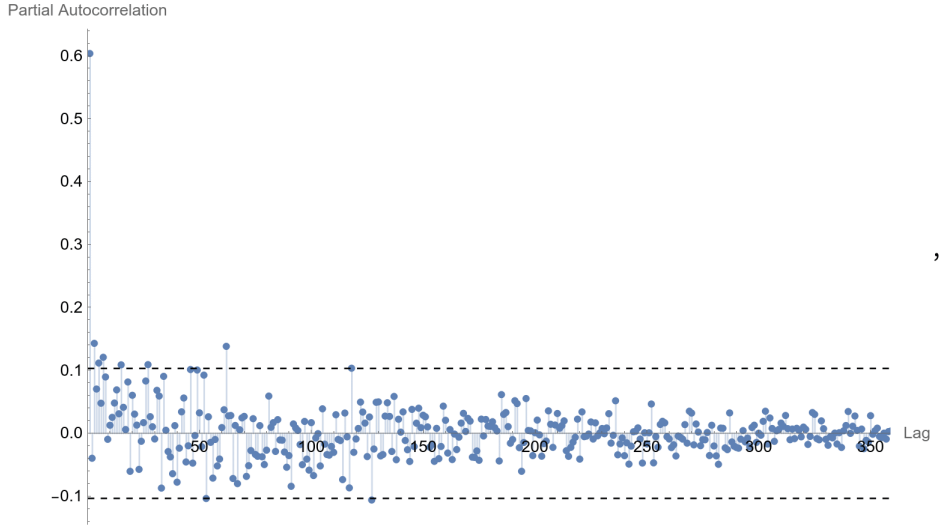
```
pacf[data_, lmax_, clev_ : 1 - 0.05, x_] :=
 Show[ListPlot[PartialCorrelationFunction[data, {lmax}], Filling → Axis, PlotRange → {{0, lmax}, All},
   PlotStyle → PointSize[Medium], ImageSize → Medium,
   PlotLabel → "Minor Planet Distance to " <> CommonName[specialpointsentities[[x]]] <>
     " Partial Autocorrelation with Abs 95% CI >" <>
     ToString[Max[Quantile[NormalDistribution[], {(1-clev)/2, 1 - (1-clev)/2}]/Sqrt[data["PathLength"]]]],
  Graphics[{Dashed, Line[{{0, #}, {lmax, #}}]}] & /@ Quantile[NormalDistribution[], {(1-clev)/2, 1 - (1-clev)/2}]/Sqrt[data["PathLength"]],
  ImageSize → Large, AxesLabel → {"Lag", "Partial Autocorrelation"}]

Table[pacf[TimeSeries[datatable[[j]]], 359, 1 - 0.05, j], {j, Length[specialpointsentities]}]
```

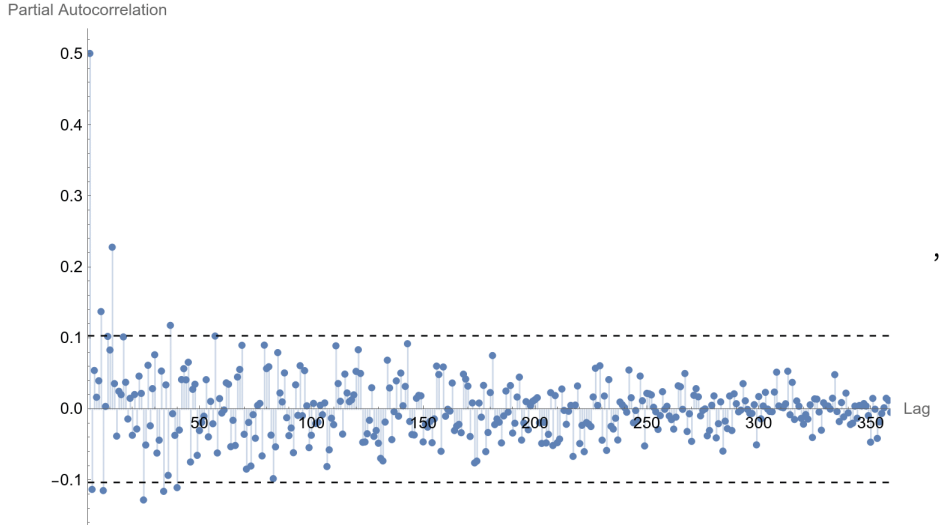
Minor Planet Distance to Mesarthim Partial Autocorrelation with Abs 95% CI >0.103299



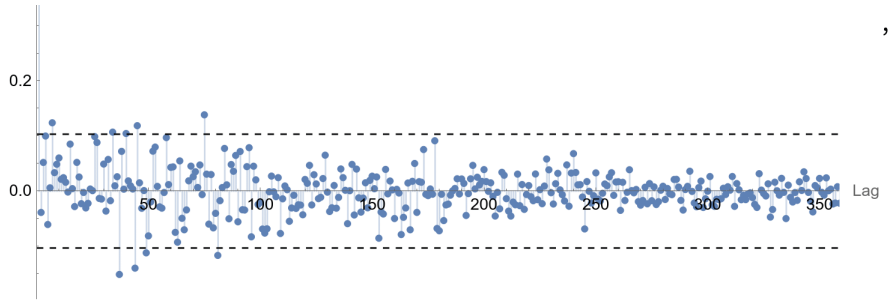
Minor Planet Distance to Sun Partial Autocorrelation with Abs 95% CI >0.103299



Minor Planet Distance to Moon Partial Autocorrelation with Abs 95% CI >0.103299

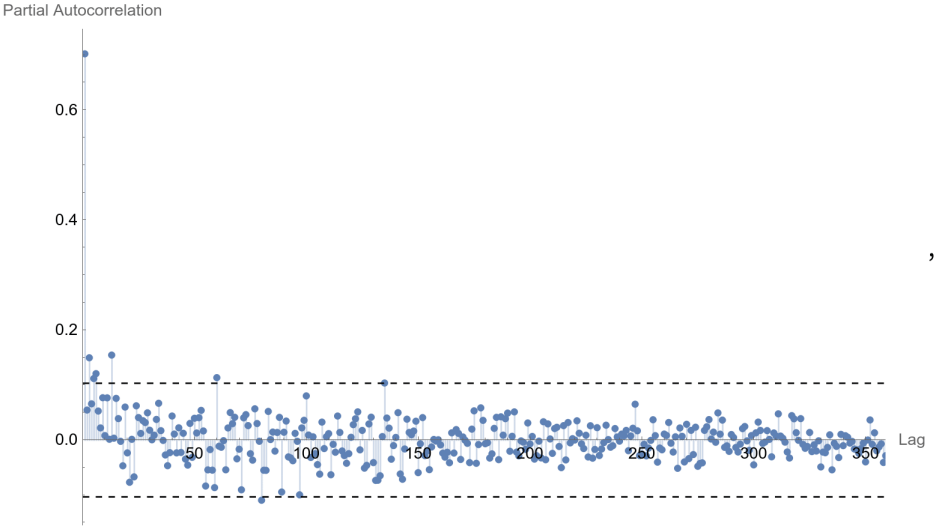


Minor Planet Distance to Mercury Partial Autocorrelation with Abs 95% CI >0.103299



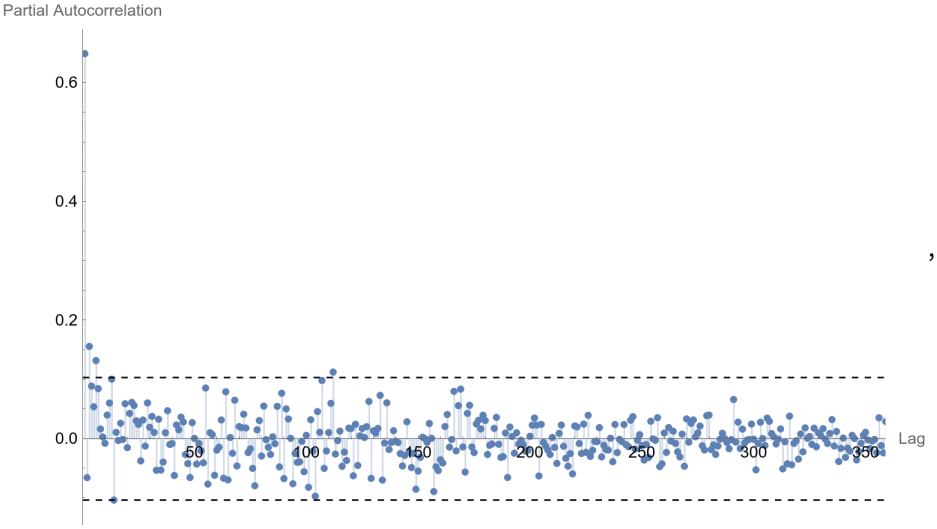
,

Minor Planet Distance to Venus Partial Autocorrelation with Abs 95% CI >0.103299



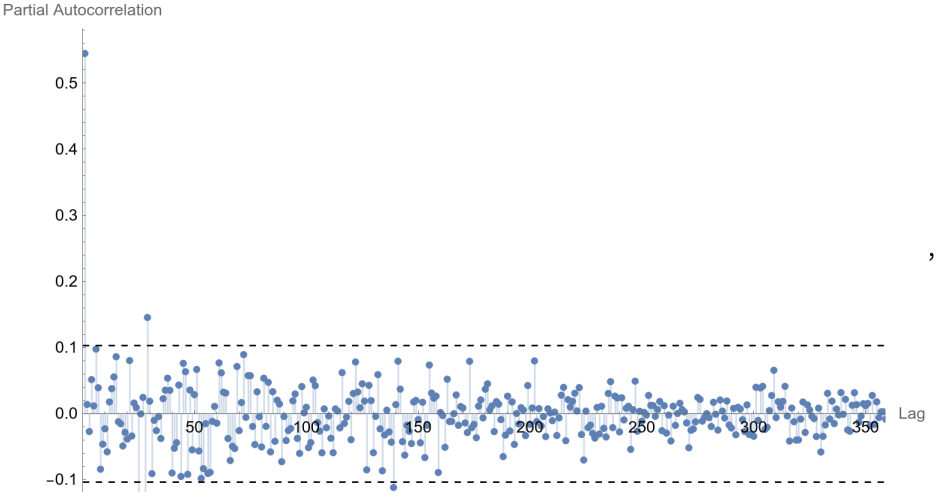
,

Minor Planet Distance to Mars Partial Autocorrelation with Abs 95% CI >0.103299



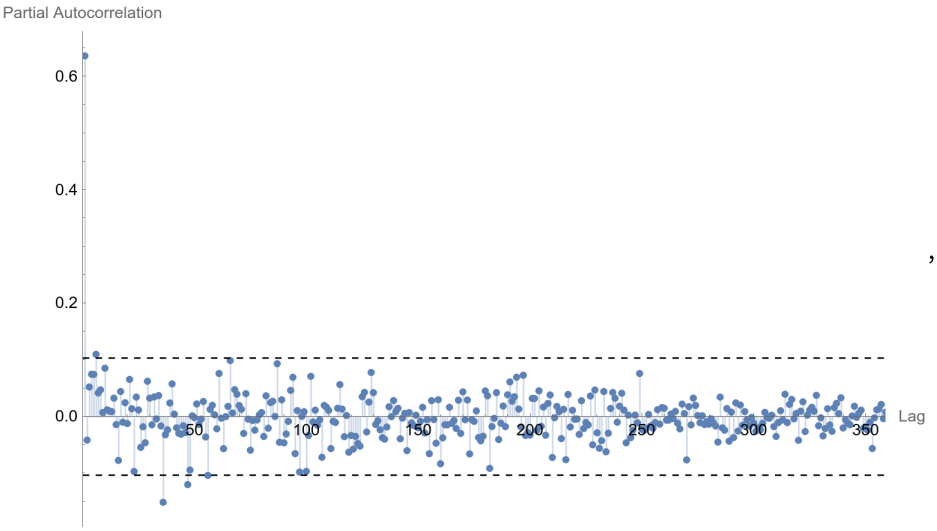
,

Minor Planet Distance to Jupiter Partial Autocorrelation with Abs 95% CI >0.103299



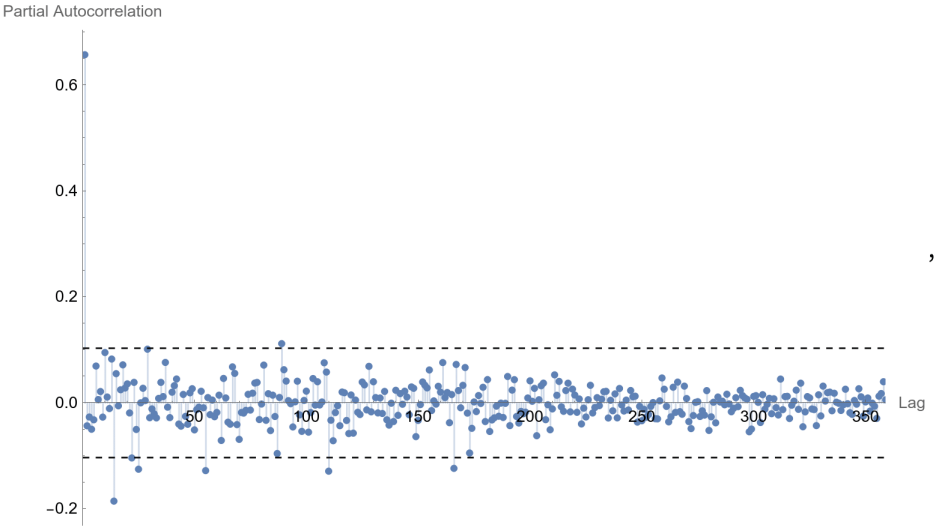
,

Minor Planet Distance to Saturn Partial Autocorrelation with Abs 95% CI >0.103299



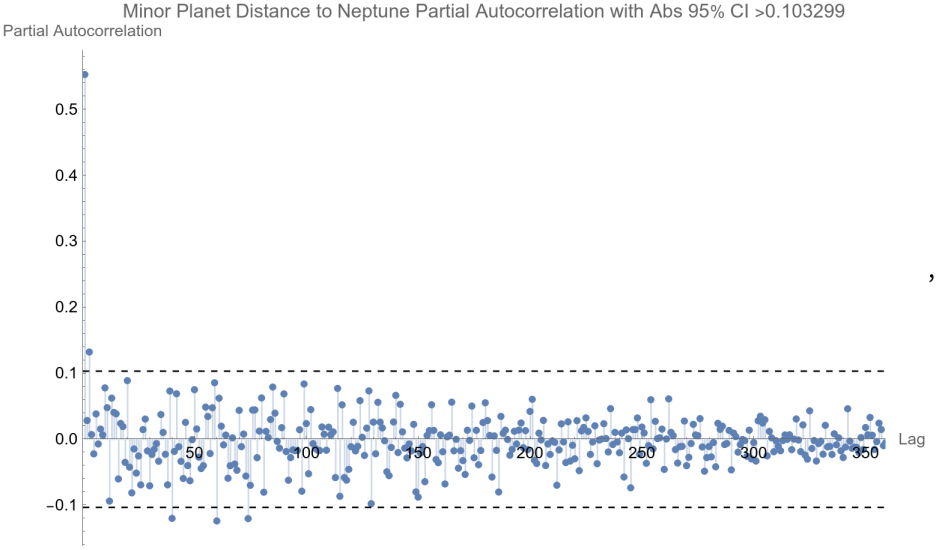
,

Minor Planet Distance to Uranus Partial Autocorrelation with Abs 95% CI >0.103299



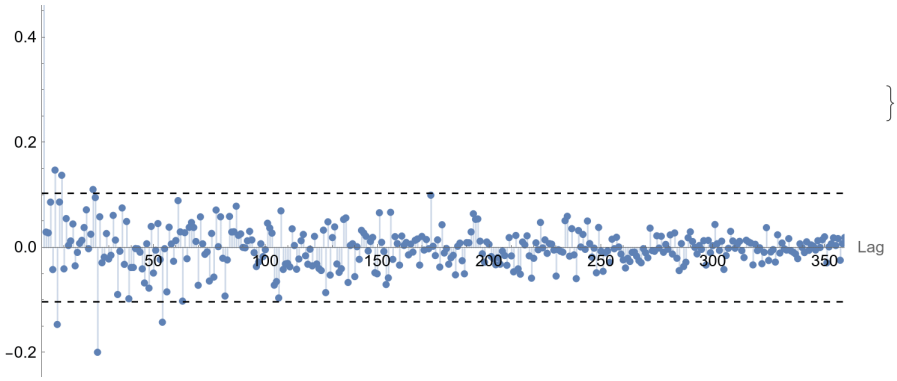
,

Minor Planet Distance to Neptune Partial Autocorrelation with Abs 95% CI >0.103299



,

Minor Planet Distance to Pluto Partial Autocorrelation with Abs 95% CI >0.103299




```
tl = Table[Cases[PartialCorrelationFunction[datatable[[i]], {359}], x_ /; Abs[x] > 0.103299], {i, 11}];
```

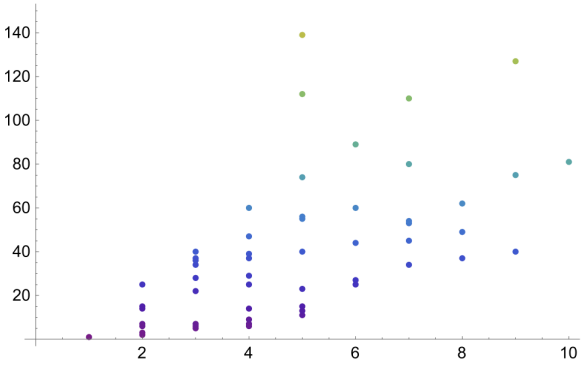
```
Length[tl]
```

```
11
```

```
pos = Table[Position[PartialCorrelationFunction[datatable[[i]], {359}], tl[[i, j]][[1, 1]], {i, 11},
  {j, 1, Length[tl[[i]]]}]
```

```
{{1, 15, 37, 39, 55, 215}, {1, 3, 5, 7, 15, 27, 53, 62, 127}, {1, 2, 6, 7, 11, 25, 34, 37, 40},
 {1, 7, 34, 37, 40, 44, 45, 49, 75, 81}, {1, 3, 5, 6, 13, 60, 80}, {1, 3, 6, 14, 112}, {1, 25, 28, 29, 139},
 {1, 6, 36, 47, 56}, {1, 14, 22, 25, 55, 89, 110, 166}, {1, 3, 40, 60, 74}, {1, 6, 7, 9, 23, 25, 54}}
```

```
ListPlot[pos, ColorFunction → "Rainbow"]
```




```
TableForm[Transpose[{CommonName[specialpointsentities], Transpose[{pos}]}]](*Significant lags*)
```

Mesarthim	1 15 37 39 55 215
Sun	1 3 5 7 15 27 53 62 127
Moon	1 2 6 7 11 25 34 37 40
Mercury	1 7 34 37 40 44 45 49 75 81
Venus	1 3 5 6 13 60 80
Mars	1 3 6 14 112
Jupiter	1 25 28 29 139
Saturn	1 6 36 47 56
Uranus	1 14 22 25 55 89 110 166
Neptune	1 3 40 60 74
Pluto	1 6 7 9 23 25 54

```
Divisors[72]
```

```
{1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72}
```