Machine Learning Classifier Files

## File: TESS\_ML\_20240412.txt

Created from the linear distribution of ~20k injections. The data in this file is used to train the classifier.

Column descriptions:

0 - pass through number (between 0 and 4)

1 - detrending window (2 or 5)

2 - analysis type (dn or dc)

3 - injection number (a separate file is required to get the associated TIC)

4 - period found from BLS

5 - T0 from BLS

6 - power from BLS

7 - transit durration from BLS

8 - transit depth from BLS

9 - S/N from BLS

10 - Depth test in the transit find routine, comparing the found event to the 2nd deepest event

11 - Depth test in the transit find routine, comparing the found event to the 3rd deepest event

12 - Stellar Mass

13 - Stellar Radius

14 - Reduced chi-squared for a trapezoidal model

15 - BIC(fourier model) - BIC(trapezoidal model)

16 - BIC(Ramp model +) - BIC(trapezoidal model)

17 - BIC(Ramp model -) - BIC(trapezoidal model)

18 - S/N from the shape test routine

19 - light curve noise

20 - Depth test in the shape test routine, comparing the found event the 2nd deepest event

21 - Depth test in the shape test routine, comparing the found event the 3rd deepest event

22 - value of minimum delta BIC

23 - Number of loops used for Fourier model

24 - Number of points in the light curve

25 - Number of data points in transit

26 - Fscale parameter — Multiplicative factor to fit scale the point-to-point photometric error to match the observation

27 - Photometric Error — constant for all data points

28 - Chi-squared of trapezoidal fit

29 - Chi-squared of Fourier fit

30 - Chi-squared of Ramp + fit

31 - Chi-squared of Ramp - fit

32 - Stellar TESS magnitude

33 - Stellar effective temperature

34 - Stellar Log(g)

35 - Injection recovery: 0 = not recovered, 1 = recovered

36 - Transit Classification Probability. This is a number between 0 and 1, where 0.0 is bad and 1.0 is good

## FILE: TESS\_TOI\_PCs\_20240426\_recV2.csv

Classification of all events with S/N > 5.0 extracted from running BLS search on TICs associated with TOIs in the year 1 CVZ.

Column descriptions:

0 - pass through number (between 0 and 4)

1 - detrending window (2 or 5)

2 - analysis type (dn or dc)

3 - TIC

4 - period found from BLS

5 - T0 from BLS

6 - power from BLS

7 - transit durration from BLS

8 - transit depth from BLS

9 - S/N from BLS

10 - Depth test in the transit find routine, comparing the found event to the 2nd deepest event

11 - Depth test in the transit find routine, comparing the found event to the 3rd deepest event

12 - Stellar Mass

13 - Stellar Radius

14 - Reduced chi-squared for a trapezoidal model

15 - BIC(fourier model) - BIC(trapezoidal model)

16 - BIC(Ramp model +) - BIC(trapezoidal model)

17 - BIC(Ramp model -) - BIC(trapezoidal model)

18 - S/N from the shape test routine

19 - light curve noise

20 - Depth test in the shape test routine, comparing the found event the 2nd deepest event

21 - Depth test in the shape test routine, comparing the found event the 3rd deepest event

22 - value of minimum delta BIC

23 - Number of loops used for Fourier model

24 - Number of points in the light curve

25 - Number of data points in transit

26 - Fscale parameter — Multiplicative factor to fit scale the point-to-point photometric error to match the observation

27 - Photometric Error — constant for all data points

28 - Chi-squared of trapezoidal fit

29 - Chi-squared of Fourier fit

30 - Chi-squared of Ramp + fit

31 - Chi-squared of Ramp - fit

32 - Stellar TESS magnitude

33 - Stellar effective temperature

34 - Stellar Log(g)

35 - Transit Classification Probability. This is a number between 0 and 1, where 0.0 is bad and 1.0 is good

36 - Recovery of TOI. This is a number with 0 - 1, closer to 1 the better the recovery of the event.

37 - TOI number the event parameters was compared to for the recovery stat. For systems with multiple planets the highest value of the recovery stat (and associated TOI number) was saved.

## FILE: TESS\_CVZ\_003\_PCs\_20240412.txt

Classification of all events, with S/N > 5.0, extracted in part 3 of CVZ Year 1 data.

Column descriptions:

0 - pass through number (between 0 and 4)

1 - detrending window (2 or 5)

2 - analysis type (dn or dc)

3 - TIC

4 - period found from BLS

5 - T0 from BLS

6 - power from BLS

7 - transit durration from BLS

8 - transit depth from BLS

9 - S/N from BLS

10 - Depth test in the transit find routine, comparing the found event to the 2nd deepest event

11 - Depth test in the transit find routine, comparing the found event to the 3rd deepest event

12 - Stellar Mass

13 - Stellar Radius

14 - Reduced chi-squared for a trapezoidal model

15 - BIC(fourier model) - BIC(trapezoidal model)

16 - BIC(Ramp model +) - BIC(trapezoidal model)

17 - BIC(Ramp model -) - BIC(trapezoidal model)

18 - S/N from the shape test routine

19 - light curve noise

20 - Depth test in the shape test routine, comparing the found event the 2nd deepest event

21 - Depth test in the shape test routine, comparing the found event the 3rd deepest event

22 - value of minimum delta BIC

23 - Number of loops used for Fourier model

24 - Number of points in the light curve

25 - Number of data points in transit

26 - Fscale parameter — Multiplicative factor to fit scale the point-to-point photometric error to match the observation

27 - Photometric Error — constant for all data points

28 - Chi-squared of trapezoidal fit

29 - Chi-squared of Fourier fit

30 - Chi-squared of Ramp + fit

31 - Chi-squared of Ramp - fit

32 - Stellar TESS magnitude

33 - Stellar effective temperature

34 - Stellar Log(g)

35 - Transit Classification Probability. This is a number between 0 and 1, where 0.0 is bad and 1.0 is good