Libraries & Recommended Citations for using `PLAsTiCC` Models

(March 29, 2019)

The model libraries in this Zenodo release were used in an LSST classification challenge knows as `PLAsTiCC`: "Photometric LSST Astronomical Time Series Classification Challenge." A scientific description of the models and simulation is in `https//arxiv.org/abs/1903.11756`. The models include transients, variables, photometric redshifts, 3-years of observations, efficiency of spectroscopic confirmation for training set, and efficiency of host-galaxy spectroscopic redshift.

For each model below we give the names of the associated library files, and we recommend model-specific references to cite in further work using these models; a compilation of BibTex entries is provided in `bibtex_plasticc_models.bib`. Files with an asterisk in front (⋆) will work only with a 3-year survey, while the other files will work for a survey of arbitrary duration. Also beware that some references are associated with multiple models. To monitor future updates (e.g., improvements or new models) please check this Zenodo link and also `http://plasticc.org`.

To run these models with the `SNANA` simulation code, contact `PLAsTiCC` team members for assistance.

Source Models

- **SNIa:**
  Model Library Files:
      `SALT2.WFIRST-H17.tar.gz`
      `SNIa_Extrap_LateTime_2expon.TEXT.gz`
  References:
      `http://adsabs.harvard.edu/abs/2010A%26A...523A...7G`
      `http://adsabs.harvard.edu/abs/2013ApJ...764...48K`
      `http://adsabs.harvard.edu/abs/2018PASP..130k4504P`

- **SNIa-91bg:**
  Model Library File:
      Model `SIMSED.SNIa-91bg.tar.gz`
  References:
      Galbany et al. in prep.

- **SNIax:**
  Model Library File:
      `SIMSED.SNIax.tar.gz`
  References:
      `http://adsabs.harvard.edu/abs/2017hsn..book..375J`
      `http://github.com/RutgersSN/SNIax-PLAsTiCC`

- **SNII:**
  Model Library Files:
  ```
  NON1ASED.SNII-Templates.tar.gz
  SIMSED.SNII-NMF.tar.gz
  SIMSED.SNIIn-MOSFIT.tar.gz
  ```
  References:
  González-Gaitán et al. in prep.
  ```
  http://adsabs.harvard.edu/abs/2010PASP..122.1415K
  http://adsabs.harvard.edu/abs/2018PASP..130k4504P
  http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  http://adsabs.harvard.edu/abs/2017ApJ...849...70V
  ```

- **SNIbc:**
  Model Library Files:
  ```
  NON1ASED.SNIbc-Templates.tar.gz
  SIMSED.SNIbc-MOSFIT.tar.gz
  ```
  References:
  ```
  http://adsabs.harvard.edu/abs/2010PASP..122.1415K
  http://adsabs.harvard.edu/abs/2018PASP..130k4504P
  http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  http://adsabs.harvard.edu/abs/2017ApJ...849...70V
  ```

- **SLSN-I:**
  Model Library File:
  ```
  SIMSED.SLSN-I-MOSFIT.tar.gz
  ```
  References:
  ```
  http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  http://adsabs.harvard.edu/abs/2017ApJ...850...55N
  http://adsabs.harvard.edu/abs/2009arXiv0911.0680K
  ```

- **TDE:**
  Model Library File:
  ```
  SIMSED.TDE-MOSFIT.tar.gz
  ```
  References:
  ```
  http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  http://adsabs.harvard.edu/abs/2018arXiv180108221M
  http://adsabs.harvard.edu/abs/1988Natur.333..523R
  ```

- **KN:**
  Model Library File:
  ```
  SIMSED.KN-K17.tar.gz
  ```
  References:
  ```
  http://adsabs.harvard.edu/abs/2017Natur.551...80K
  ```

- **AGN:**
  Model Library File:
  > *LCLIB_AGN-LSST.TEXT.gz

  References:
  > http://adsabs.harvard.edu/abs/2010SPIE.7738E..10C
  > http://adsabs.harvard.edu/abs/2010ApJ...721.1014M

- **RRL:**
  Model Library File:
  > *LCLIB_RRL-LSST.TEXT.gz

  References:
  > http://adsabs.harvard.edu/abs/2010SPIE.7738E..10C
  > http://adsabs.harvard.edu/abs/2010ApJ...708..717S

- **Flaring M-Dwarfs**
  References:
  > http://adsabs.harvard.edu/abs/2010SPIE.7738E..10C
  > http://adsabs.harvard.edu/abs/2011PhDT.......144H
  > http://adsabs.harvard.edu/abs/2014ApJ...797..122D

- **EB:**
  Model Library File:
  > *LCLIB_EB-PHOEBE.TEXT.gz

  References:
  > https://ui.adsabs.harvard.edu/#abs/2005ApJ...628..426P
  > https://ui.adsabs.harvard.edu/#abs/2016ApJS..227...29P
  > https://ui.adsabs.harvard.edu/#abs/2018ApJS..237...26H

- **Mira:**
  Model Library File:
  > *LCLIB_MIRA_ISW2011.TEXT.gz

  References:
  > http://adsabs.harvard.edu/abs/2011MNRAS.418..114I

- **μLens-Single:**
  Model Library Files:
  > *LCLIB_uLens-Single-PyLIMA.TEXT.gz
  > *LCLIB_uLens-Single-GenLens.TEXT.gz

  References for PyLIMA:
  > http://adsabs.harvard.edu/abs/1986ApJ...304....1P
  > http://adsabs.harvard.edu/abs/2000ApJ...542..785G
  > http://adsabs.harvard.edu/abs/2012RAA....12..947M

  References for GenLens:
  > https://ui.adsabs.harvard.edu/#abs/2000ApJ...541..587D
  > https://ui.adsabs.harvard.edu/#abs/2012ApJS..201...21D
  > http://ogle.astrouw.edu.pl

- **μLens-Binary:**
  Model Library File:
  > *LCLIB_uLens-Binary.TEXT.gz

  References:
  > https://ui.adsabs.harvard.edu/#abs/1997ApJ...488...55D
  > https://ui.adsabs.harvard.edu/#abs/2008ApJ...686..785N
  > https://github.com/ArturoAve/microlensing

- **ILOT**
  Model Library File:
  > SIMSED.ILOT-MOSFIT.tar.gz

  References:
  > http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  > http://adsabs.harvard.edu/abs/2017ApJ...849...70V

- **CaRT:**
  Model Library File:
  > SIMSED.CART-MOSFIT.tar.gz

  References:
  > http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  > http://adsabs.harvard.edu/abs/2017ApJ...849...70V
  > http://adsabs.harvard.edu/abs/2012ApJ...755..161K

- **PISN:**
  Model Library File:
  > SIMSED.PISN-MOSFIT.tar.gz

  References:
  > http://adsabs.harvard.edu/abs/2018ApJS..236....6G
  > http://adsabs.harvard.edu/abs/2017ApJ...849...70V
  > http://adsabs.harvard.edu/abs/2011ApJ...734..102K

- **μLens-String:**
  Model Library File:
  > *LCLIB_uLens-String.TEXT.gz

  References:
  > http://adsabs.harvard.edu/abs/2014PhRvD..8914003B
  > http://adsabs.harvard.edu/abs/2015IJMPD..2430010C
  > http://adsabs.harvard.edu/abs/2018JCAP...05..002C

Simulation Models

- **Photo-z:**
  Model Library File:
  > `LSST_photoz_G18.HOSTLIB.gz`

  References:
  > `http://adsabs.harvard.edu/abs/2018AJ....155....1G`

- **Observation Library:**
  Model Library Files:
  > `*LSST_OBSERVATIONS_DDF.SIMLIB.gz`
  > `*LSST_OBSERVATIONS_WFD.SIMLIB.gz`
  > `LSST_filter_transmissions.tar.gz`

  References:
  > `http://adsabs.harvard.edu/abs/2016SPIE.9910E..13D`
  > `http://adsabs.harvard.edu/abs/2016SPIE.9911E..25`
  > Biswas et al. 2019, In Prep

- **Spectroscopic Confirmation for Training Subset:**
  Model Library File:
  > `LSST_SPECEFF_DES+0.2mag.TXT.gz`

  References:
  > `https://ui.adsabs.harvard.edu/#abs/2019MNRAS.485.1171K` (Fig. 4)

- **Spectroscopic Redshift of Host Galaxy:**
  Model Library Files:
  > `LSST+4MOST_zHOST_DDF.DAT.gz`
  > `LSST+4MOST_zHOST_WFD.DAT.gz`