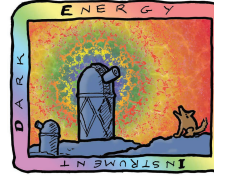# Introduction to QuickCat

R. Kehoe (SMU)

- Large scale structure catalogs
  - Require effective rendition of
    - DESI detector performance
    - observation quality

  - Fits into catalog processing at point that objects have been determined to have been observed
    - Targetting and fiber assignment decisions made
    - Need to operate on the input from this simulation to produce a 'final' catalog

- Need a way to ensure
  - Provide 'measured' redshifts, efficiencies and classifications as in DESI data survey
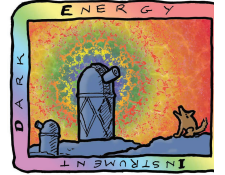
Requirements

- Take a set of sources with properties {x}
  - Measure them with properties {x'} at some efficiency

- Developing list of dependencies
  - Three areas to consider
  - Detector performance
    - Eg. Flux, wavelength sensitivity, resolution
  - Observational conditions
    - Eg. Sky brightness, focus, seeing,
  - Algorithmic effects
    - Eg. Cosmic removal, sky subtraction artifacts
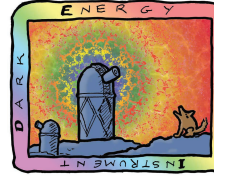 - Taken into measurements of {x'} and efficiency

# 0th Order Goal of Workshop
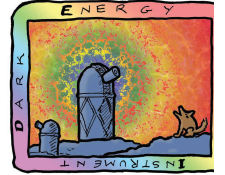
- Establish role of QuickCat in creation of LSS catalogs

- Determine
  - catalog inputs and interfaces
  - QuickCat output content, format

- Take output redshift = input redshift

Next Step

- Redshift accuracy for detected tracers
  - ELGs, LRGs, QSOs, BGs
  - Dependency on redshift
  - Also a dependency on flux
  - ELGs affected differently than Lyα vs. wavelength

- We can examine redshift fitted spectra with actual values
  - Eg. RedMonster outputs
  - Can examine redshift success, and accuracy for each tracer type
  - RedMonster-ready inputs prepared for each type
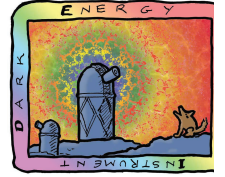
Further Work

- Substantial simulation work
  - Of all tracers, and stars
  - Study classification, efficiency and redshift accuracy
    - Need to be able to 'confuse' inputs as other categories, for instance

- Need significant simulations of various tracer types
  - QuickGen (encapsulates QuickSim) to simulate observed spectra
  - Need redshift fitting
  - Once have this, can run many spectra thru to related input redshift (i.e. {x0}) to output redshift {x'0}
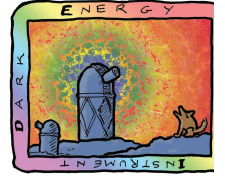
Workshop Plans

- Focus on 0th order goal
  - Sole focus of 1st day sessions

- Will have presentation/tutorial on
  - redshift fitting,
  - Spectroscopic simulation
  - **Input welcome**
    - **Clustering, BGS involvement**
    - **Spectrscopy side, and data pipeline**

- Primary goal: implementation of initial tool
  - Parametrization of input {x} vs {x'}

- Also establish set of requirements for
  - QuickCat inputs and outputs
  - Studies for QuickCat parametrization