

Cannon & individual abundances

intro

astrophysics with detailed abundances

the need for abundance precision, consistency and accuracy

surveys define their S/N,R requirements through the precision for individual abundances

Apogee as the application

this is how good ASPCAP does

X/H with the Cannon

use the Cannon as is (unfiltered)

modifications (filtering) to the Cannon

many pixels should be largely uninformative on (lesser) [X/H] labels

except that astrophysically [X1/H] IS correlated with [X2/H]

that will force us to contemplate data-driven and astrophysics-driven label-(estimate)-correlations

this is what we do in this paper

Cannon out of the can with many abundances [X/H]

starting point

had speculated on need for vast training set for many labels in N15

but disjoint lines for different elements (may) decouple the problem

let's just take S/N>200 as training set and see what happens @leave-one-out

Results

whoa that looks great

works with finite training set

validate on individual visit spectra

Cannon does better than ASPCAP at given S/N

basic labels Teff,logg take a hit

the filtered Cannon

Practical experiments

filters

binary filters [0/1]

wavelength based on

ASCAP windows

gradient spectra

results

based on single-visit spectra

discussion

conceptual issues

testing

is the model no longer data-driven

APOGEE value-added indiv.abundances catalog

operative description

comparison to ASPCAP

filtered or unfiltered catalog?

do we see anything "remarkable"?