SNEWS Update

Neutrino 2010

Kate Scholberg (for the working group)

- What's new since Nu2008
- Review of operational mode/nomenclature
- Operational mode history
- Other notes

Since last SNEWS meeting at Neutrino 2008:

- Server has been running smoothly at BNL;
  regular shift checks by SNEWS 'subgroup'
  BNL MOU refreshed in 2009

- Backup server at the U. of Bologna also
  running smoothly

  - receives alarms from clients
  - email output only enabled if other server
    or BNL network disabled (rarely happens)
  - part of regular shift check

- New 3-year grant from NSF (undergrad+ travel)

Operational Mode History

- April 2006: Operational Mode 3.0 in effect
  SK+LVD+AMANDA/IceCube+SNO
  (reported at Nu2006):
  with new INDIVIDUAL type

- January 2007: Operational Mode 3.1 in effect: with new Bologna backup server
  SK+LVD+AMANDA/IceCube

- Spring 2009: Operational mode 4.0
  SK+LVD+ Borexino+IceCube
  new BNL configuration/MOU

Coincidence Alert Types

GOLD alert: clean, unambiguous AUTOMATED alert, to experimenters and astronomers

SILVER alert: coincidence with one or more problems, to experimenters only (NOT lost, just delayed)

- calibration or other tag on any alarm
- too few in coincidence at distant locations
- history of high rate

Experiments define procedure for each

Packet Types

Packet types

PING: test only
ALARM: action depends on level flag
RETRACTION: remove alarm from queue in time windows (for given expt)

Level flags (decided by individual experiment)

TEST: for test queue
POSSIBLE: for alarm queue, lower quality
GOOD: for alarm queue, all OK
RETRACTED: removal packet (redundant)
OVERRIDE: for alarm queue, confirmed good

GOLD alert must have *all* of the following conditions met: (otherwise, it's SILVER)

1. A two- or more fold coincidence within 10 seconds

   (can modify for more experiments)

2. At least two experiments at different laboratories

3. Two or more alarms flagged as GOOD

4. Rate of alarms in past time intervals for at least 2 experiments involved must not be too high (require< 1/100 yr accidental coincidence)




Notes on Rate Lookback Criterion

For intervals $\{T_i\}=\{10\text{ min}, 1\text{ hr}, 10\text{ hr}, 1\text{ d}, 3\text{ d}, 1\text{ wk}, 1\text{ mo}\}$

require *consistency with ~1/week rate*

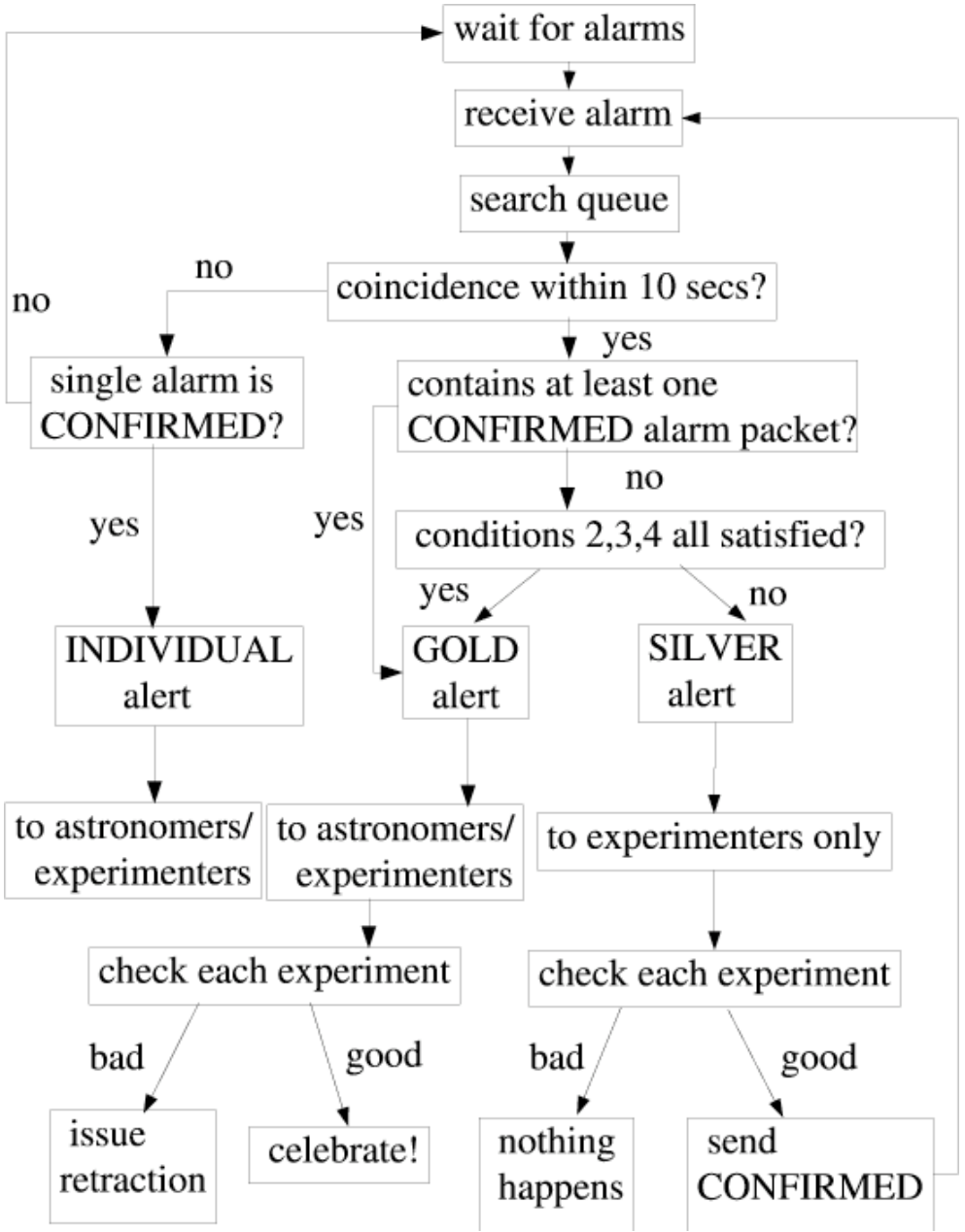
For the $\{n_i\}$ alarms sent by each experiment, require the Poisson probabilities $\{P_i\}$

$$\mathcal{P}_i = \sum_{n=n_i}^{\infty} (\lambda_{\max} T_i)^n e^{-\lambda_{\max} T_i} / n!$$

each to be greater than P_{thr}

P_{thr}=0.5% corresponds to requirement of $\{n_i\}<\{1,2,2,3,4,5,11\}$ for each experiment

Flowchart


wait for alarms
receive alarm
search queue
coincidence within 10 secs?
no
no
yes
single alarm is CONFIRMED?
contains at least one CONFIRMED alarm packet?
no
yes
yes
conditions 2,3,4 all satisfied?
yes
no
INDIVIDUAL alert
GOLD alert
SILVER alert
to astronomers/ experimenters
to astronomers/ experimenters
to experimenters only
check each experiment
check each experiment
bad
good
bad
good
issue retraction
celebrate!
nothing happens
send CONFIRMED

Alert Dissemination

- PGP-signed email sent to `snews-alert` mailing list maintained at BNL (anyone can sign up)

- Addresses include Sky&Telescope AstroAlert mailing list

- Subscriber list is private for SPAM/security reasons but is available to advisory board members upon request

Recent flurry of signups!

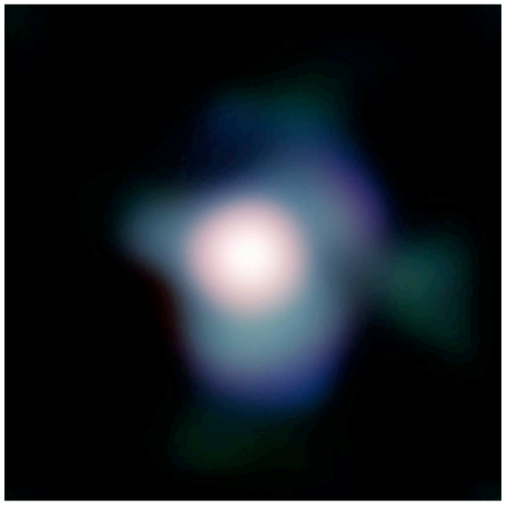
Blogs / Bad Astronomy

« What science is, from a freshly-minted scientist
Climate Denial Crock of the Week »

Is Betelgeuse about to blow?

Stumble! 154 70 digg

I was going to wait to write about this, but I'm getting a lot of emails about it, so I'll say something now, and followup when I get more information.



The story:

BABloggee Alereon (and many others) sent me to an interesting site: Life After the Oil Crash Forum — a forum that apparently has a lot of doomsday-type scuttlebutt posted to it.

An anonymous poster there says he has heard that the star Betelgeuse is about to go supernova, maybe as soon as a few weeks:

> *I was talking to my son last week (he works on Mauna Kea), and he mentioned some new observations (that will no doubt get published eventuallu) of "Beetleiuice": it's no lonaer round. This is a huae star. and when it aoes. it*

~1450 new around June 1-3! (out of ~2000)

Direct alert to eStar robotic telescope network using VOEvent protocol

eSTAR

(A. Allan and T. Naylor at U. of Exeter:
UKIRT telescope connection)

Check of connection part of regular SNEWS shift check

Summary

SNEWS server running smoothly at BNL;
SK IV, LVD, Borexino, IceCube

Version 4.0 of operational mode in effect

Continuing to expand recipient networks