

SNEWS Update and Status

Nu2004

June 15, 2004

Kate Scholberg

Alec Habig (SK)

Toshio Namba (SK)

Clarence Virtue (SNO)

Fabrice Fleurot (SNO)

Carlo Vigorito (LVD)

Brett Viren (BNL)

Blake Stacey (MIT)

S'NEWS since Nu2002

1. **Astro-Alert tests with Sky & Telescope**
2. **SNEWS server moved to BNL**
3. **SNEWS Operational Mode document**
4. **Few other random things**

The Sky & Telescope AstroAlert mailing list

Leif Robinson
Rick Feinberg
Roger Sinnott

~few 1000
people
on list

SKY & TELESCOPE

My location Greenwich, UK
[change](#) **ALMANAC** [more](#) rise: 6:44 am set: 5:41 pm phase rise: 7:06 am set: 4:51 pm **Evening planets** JUPITER SATURN

Search Entire Site for **GO**

Home > Observing > Pro-Am Collaboration > AstroAlert

NEWS
OBSERVING
Sky at a Glance
Observing Highlights
Sky Chart
Almanac
Celestial Objects
Pro-Am Collaboration
Image Gallery
HOW TO
RESOURCES
SKY & TELESCOPE MAGAZINE ARCHIVE
SHOP AT SKY

[Printer-friendly version](#)

Nearby-Supernova AstroAlert Report Form

Use this form to report your observations following receipt of a nearby-supernova [AstroAlert](#), whether or not you found anything suspicious. (If you are responding to our February 2003 test, you've come to the right place.) Please fill in as many fields as you can.

Your Name:

E-mail Address:

Observing Site:
(Latitude, longitude, or city, state, country.)

Time Zone:
(Your standard time zone. For example, EST in the U.S. is UT - 5h.)

DST in Effect: Yes No (Is daylight-saving time in effect?)

We'd like to know how you first received the AstroAlert (that is, via what type of device), and how long it took for the message to reach you. For the first two "when" questions, refer to the alert's extended e-mail header. (If you're not sure how to find this information, just leave it blank.)

How Received:
(Work computer? Home computer? Handheld? Cell phone?)

Magazine

SUBSCRIBE TO SKY & TELESCOPE

- Subscribe or Renew
- Change Address
- Back Issues
- Index & Archive

Shop at Sky

- Accessories & Games
- Atlases, Maps & Globes
- Books
- Calendars & Almanacs
- Posters, Prints, Slides & Videos
- Sky & Telescope Logo Items
- Sky & Telescope Magazine
- Software

Laminated Messier Card

DEEP SKY COMPANIONS

Test in mid-February 2003 with asteroid Vesta

- magnitude 6.7
- near stationary point in retrograde loop

13 deg uncertainty radius given

Well-tagged as a fake!

Results: (Roger Sinnott)

- ~100 responses
- global representation
- naked eye, binoculars, up to Schmidt-Cassegrains
- email took average 55 minutes to arrive
⇒ can improve
- 70% read within 8 hours
- average spent 42 minutes in search
- ~5 found it
- one took photographic survey

Lessons from AstroAlert test:

- **improve email speed**
- **encourage photographic survey**

Next test: this summer

New home for the server:



Coincidence server

**(primary + backup) behind firewall
in physically secure location**

Brett Viren as SNEWS sysadmin

Running smoothly since Feb '04

Memorandum of Understanding

signed by:

SNEWS Advisory Board

Y. Suzuki, A. McDonald/H. Robertson, W. Fulgione

Chairman of BNL Physics Dept. S. Aronson

Director of BNL IT Division T. Schlager

BNL provides:

- SNEWS sysadmin**
- physically secure location**
- OS installation and maintenance**
- security maintenance**
- quarterly audits and reports**
- failover support**

SNEWS provides:

- hardware (2 machines)**
- code installation and maintenance**

SNEWS Operational Mode document

Detailed description of all parameters
(security, shifts, etc.),
esp. coincidence mode

Defines procedure in case of alerts (automation)

Changes whenever
new experiments or servers added, etc.

Status:

- approved by LVD
- comments from SNO incorporated;
SNOboard meeting late June
- SK approval after SK-specific procedure determined

Version 1.0:

<http://cyclo.mit.edu/~schol/snewsmo/>

Review of Coincidence Criteria

**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

Review of Definitions

Packet types

PING: test only

ALARM: action depends on level flag

RETRACTION: remove alarm from queue in
time windows (for given expt)

Level flags

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**



(modify for more experiments)

**2. At least two experiments at different
laboratories (automatically satisfied in current mode)**



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" (must be consistent with 1/week)**



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 $\sim 1/\text{week}$ rate

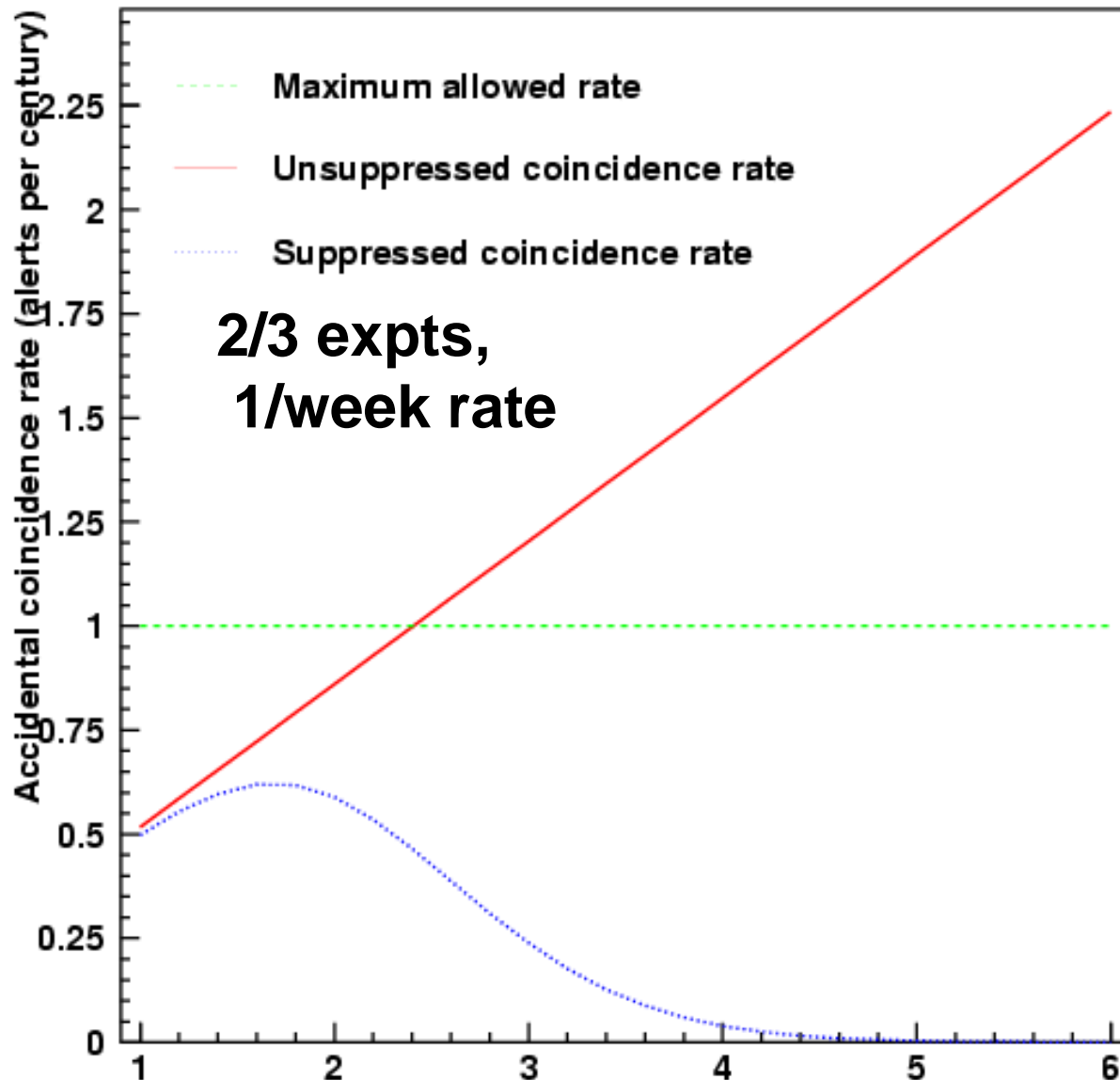
For the $\{n_i\}$ alarms sent by each experiment,
require the Poisson probabilities $\{P_i\}$

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

each to be greater than P_{thr}

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

Effectiveness of this criterion in suppressing accidental coincidences:

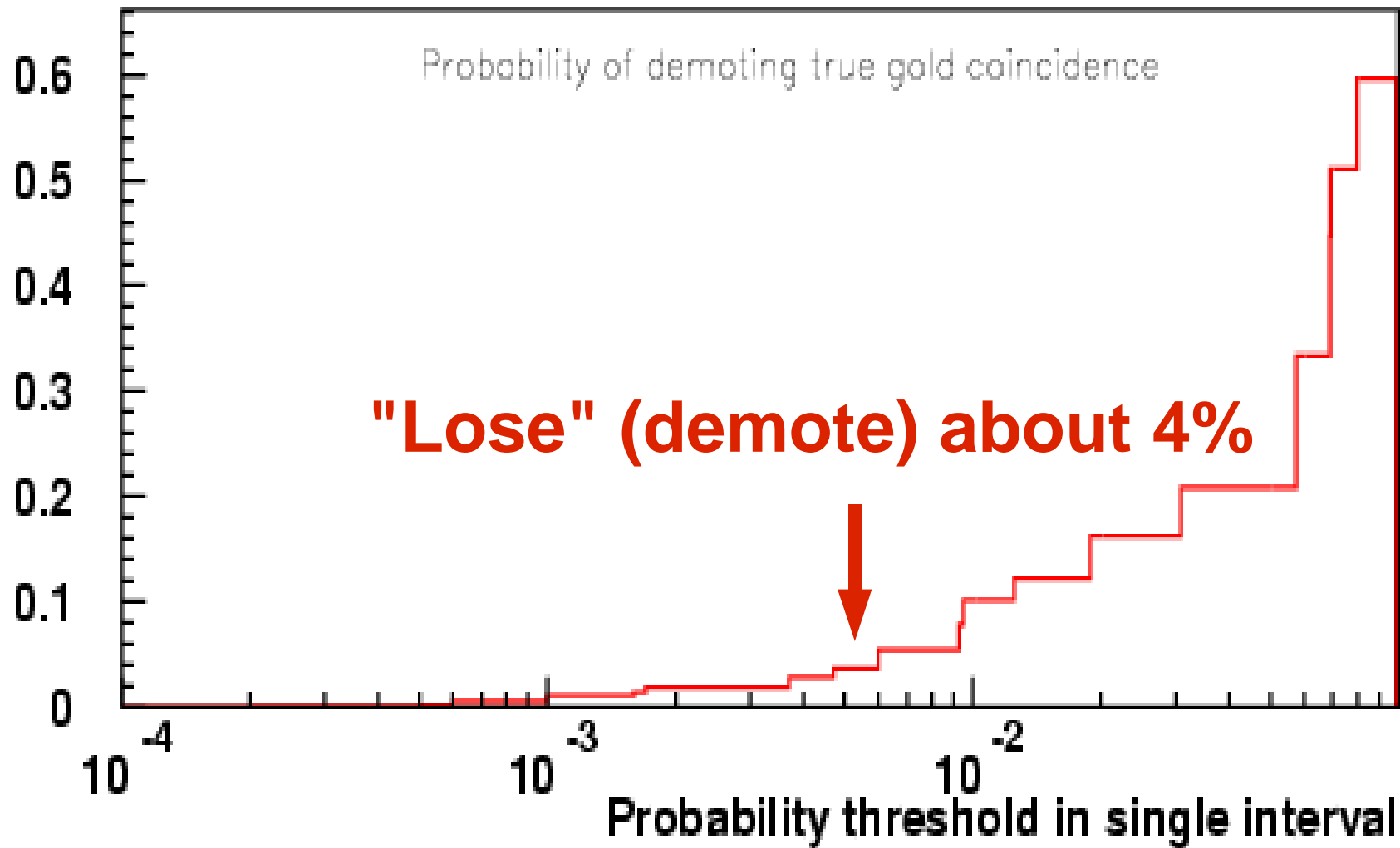


It works well!

(Note:
rates are
monitored by
subgroup and
long term
increases can
be addressed)

Rate increase factor for single experiment over 1 month period

Some real GOLD alerts will be demoted, due to Poisson fluctuations:



We can live with this...

Promotion and Demotion

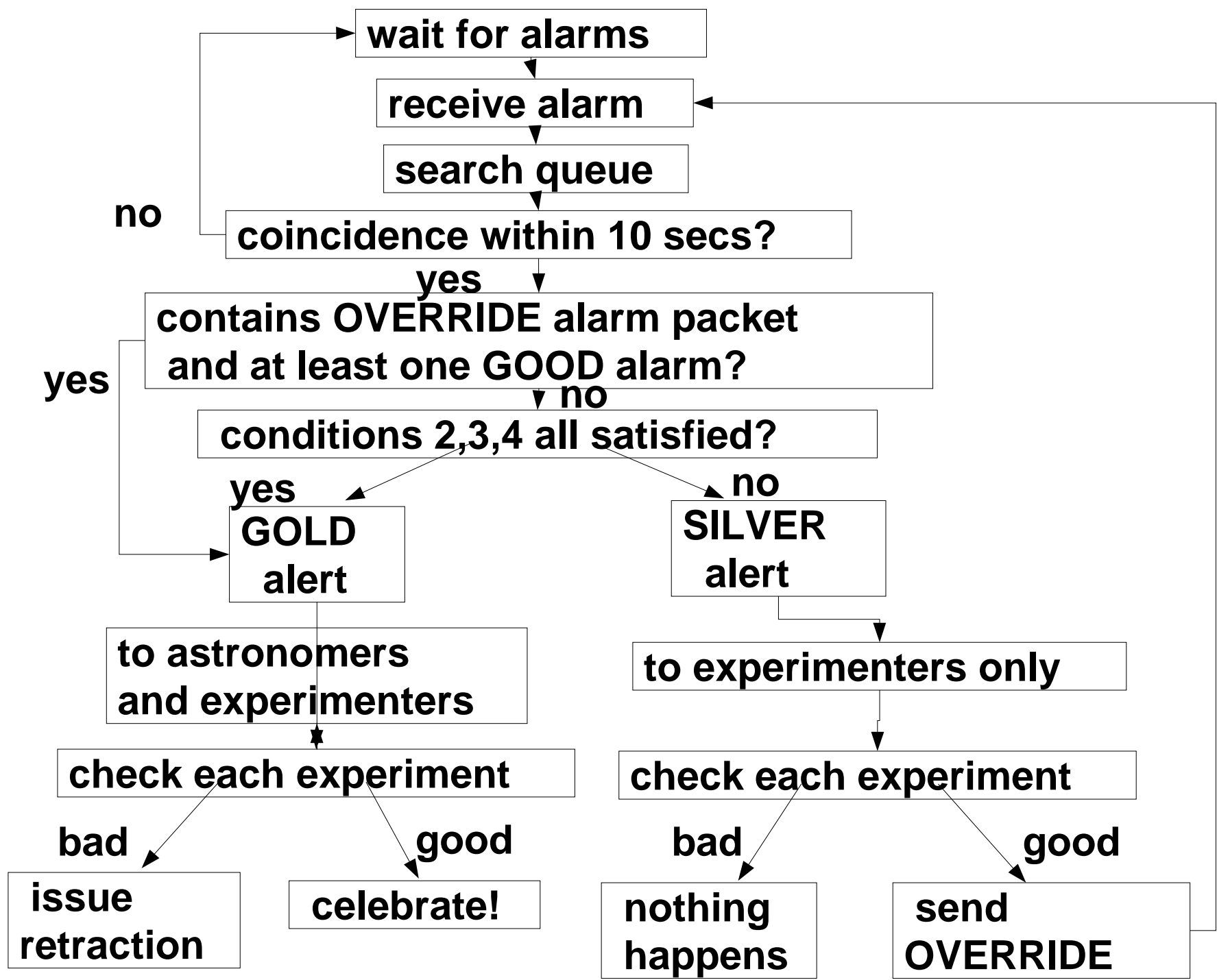
For SILVER: experiments can re-issue alarms upgraded from POSSIBLE to GOOD/OVERRIDE; the coincidence will automatically re-evaluate

GOLD may also be generated for at least 1 GOOD + OVERRIDE (regardless of other criteria)

If a change of status occurs after a RETRACTION packet,
a retraction message is issued (we hope never!)

Note: at any time, experiments may issue their own alert. (If any SNEWS alert has been received beforehand, it should be cited)

Summary Flowchart



A Few Other Random Things...

Downtime page upgraded by Blake Stacey

<https://cyclo.mit.edu/snnnet/wg/downtime/>

**SNEWS shifts now run (by subgroup members):
twice daily check, on-call**

SNEWS technical paper: [astro-ph/0406214](#)

**J. Bahcall Cycle 13 HST proposal,
"Observing the Next Nearby Supernova",
approved (Phase I)**

Summary & Status

SK/SNO/LVD alarm packets:

SK/LVD automated normal packets

SNO test mode packets

More soon ?

SNEWS server running smoothly at BNL

**SNEWSMO document with implementation
of gold/silver scheme to be approved soon**

**Please see SNEWS poster by Alec
in 2nd session!**