2020-11-26

Present:

Ramesh Bhat
Hazel Titley
Susmita
Marcin Sokolowski
Nick Swainston
Sam McSweeney
Ryan Shannon
Stephen Ord
Willem van Straten
Bradley Meyers
Mengyao Xue
Ian Morrison

Discussion:

RB:

- New proposal call, but exclusively for extended configuration
- Since last time, had 3 observing runs (50-60% of sky covered so far)
- Reminder that "processing" so far has just been "shallow"
- Recapping highlights from J0036-1033 detections
    - unremarkable pulsar (except for the fact that its our first!)
    - from < 1% of data!
    - exploited archival data for confirmation
    - localisation from ~20' to ~10" via regridding
    - ~30" offset mystery (more discussion later)
    - Parkes followups with UWL: No detection (initially)
    - GMRT followups with central antennas: Detection in both Bands 3 & 4
    - Nick managed to make a Parkes detection (1/6 obs)
    - GMRT imaging: Detection in both Bands 3 & 4
    - GMRT confirms ~25-30 offset. Residual 4" offset still not yet understood
    - Main motivation: get flux density, to confirm whether pulsar is low luminosity
- Survey simulation by Mengyao confirms we're on track with our 1 new pulsar
- MWA Phase 3 starting in 2021 -- have to finish observations in Phase 2!

RS: What time span do observations cover?
RB & NS: 150 days
RS: Can you time the pulsar?
RB: Did attempt. Could not completely phase connect. Can someone else try?
RS: Sure. Send the TOAs my way.
SO: Is there a jump?
RB: Probably more a systematic error over time. Quadratic/cubic?
SO: Has there been any successful attempt to time MWA data?
RB: Yes, e.g. Dilpreet's analysis
SO: Then system must be working -- difficulty must be with pulsar. Position error?
RB: Agree. System is probably ok. GMRT gives position to ~few arcseconds.
SO: Test by shifting position and re-timing. See how errors change.
RS: Quadratic errors can probably come from position error, or binary orbit!
SO: P-dot can be better obtained by using observations less widely separated in time
RB: Is P-dot from pdmp also good enough?
SO: Paolo Friere has paper that might help, to do with extracting P-dots
RB: Slow pulsar means relatively few pulses...
SO: Could stability of profile be the issue (given so few pulses)?
RB: Might give random errors.
RS: Probably not, judging by the error bars.
RB: Plan is to publish whatever we have ASAP
BM: Can CHIME help?
RS: Better to wait until paper is out. Us not having access to CHIME data is a turn-off.
SO: What about an ATel?
RB: Still prefer to finish the paper.
SO: First MWA new pulsar, so it may still be worth it, especially since we (now!) have a timing solution
SO: Depends on paper timeline, as to whether ATel makes sense.
RB: Yep -- plan is: couple of weeks till Collaboration Review
WvS: I have a timing solution!
All: Fantastic!
RB: All going well, in that case, TOAs can probably go into paper
RS: Do you have TOAs for earlier observations?
NS: No, but I can generate them.

Nick's Processing Update:

- Compare July vs Now
- Stuart has been helping look through candidates
- Migrated to Garrawarla
- Containerisation has made it all very easy
- Garrawarla currently more used than OzStar, but OzStar inherently faster

RS: Continue asking for time on OzStar every semester
RS: Eventually need to distribute processing more widely
SO: Yep, no harm trying out on any other machine that comes along, because of containerisation
RS: Transfer rates are a bottleneck, but not major.

Sam's Update:

- ML update (Isaac's work and Hazels work)
- Database app imminent!

SO: There is a new technique! Out of the SKA group.
SM: Great! Send it through! We'll see if it's the same as the LOFAR one.

Marcin's update:

- MWA imaging -- getting down to 12 mJy/beam in Stokes I, and 2 mJy/beam in Stokes V
- But positioning was not so clear.
- Numbers from GMRT suggest only ~1 sigma detection in MWA
- Susmita's imaging pipeline to detect new pulsars

SO: There's a lot of sidelobe noise. How much deconvolution?
MS: They were cleaned, but not sure how many iterations.
MS: Did try longer integration times, but didn't help too much. Don't think ionosphere was the problem.
SO: I might be able to help, if you have measurement sets.
RB: Sure, but for now, ok for paper to only discuss "putative source" in MWA images.
SO: Should be able to get larger integration time

Action items:

- **NS/RB** to send RS, SO, and WvS the J0036-1033 TOAs
- **SO** to send details of pulsar ML to SM
- **MS** to send CASA measurement sets to SO (& Mitch)