



Title: IACHEC Timing WG telecom

Date: 13 May 2022

Time: 14:00 UTC = 23:00 JST = 10:00 EDT = 7:00 PDT = 16:00 CEST + 80min

Zoom: <https://zoom.us/j/92156781264> (passcode: iachec)

Notes (editable):

https://suitc-my.sharepoint.com/:w:/g/personal/terada_mail_saitama-u_ac_jp/ETgMJU911chJhFh7RKRwC_4BkMzK6MK3LRvz2FU7hhcvGQ?e=pBWYIf (password=iachec#time)

Participants: Kristin, Yuki, Giancarlo, Dipankar, Matteo, Minami, Takumi, Vinay, Katja, Simon

Meeting Notes are shown in Red. (Participants can edit this page.)

Agenda

1. Working group information
2. Activity I: Summary Table of Timing Performance/Calibration
3. Activity II: Systematic survey of Timing Calibration of multi missions using Crab pulsar
4. Activity III: Systematic study of the effects of dead time etc on timing products

0. IACHEC Information

- 2022 IACHEC Spring Virtual Workshop
May 23-25, 09:00-12:00 EDT = 13:00-16:00 UTC
- You need to register

1. Working Group Communication (short announcement)

Updates are shown in blue

1.1 Current Members & Mission

Yukikatsu Terada (Suzaku,Hitomi, XRISM), & Minami Sakama, [Takumi Shioiri](#) (XRISM)
Craig Markwardt (NICER),
Teruaki Enoto (NICER),
Matteo Bachetti (NuSTAR),
Katja Pottschmidt (NuSTAR),
Felix Fuerst (XMM-Newton),
Simon Rosen (XMM-Newton),
Vinay Kashyap (Chandra),
[Arnold Rots](#) (Chandra),
Amy Lien (Swift),
Giancarlo Cusumano (Swift),
Guillaume Belanger (INTEGRAL),
Volodymyr SAVCHENKO(INTEGRAL),
Lucien Kuiper (INTEGRAL)
Xiaobo LI (HXMT),
Gulab Dewangan (Astrosat),
Dipankar Bhattacharya(Astrosat),
Michael Freyberg (eROSITA),
Makoto Sawada(XRISM),
Takaaki Tanaka (XRISM)
Kristin Madsen

1.2 IACHEC Timing ML : iachec-time@heal.phy.saitama-u.ac.jp (Please ask Yuki to update.)

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kmadsen@umbc.edu,

1.3 IACHEC Slack

- 11 members on IACHEC/Timing Slack at this moment
 - Yuki, Vinay, Felix, Gulab, Katja, Matteo, Simon, Teru, Takaaki, Xiaobo, Craig
- Please Join.(invitation this week)
 - https://join.slack.com/t/iachec/shared_invite/zt-184vtwt8m-U~Uai6zp3~CiPU12RVZ~RQ

1.4 IACHEC Timing WWW

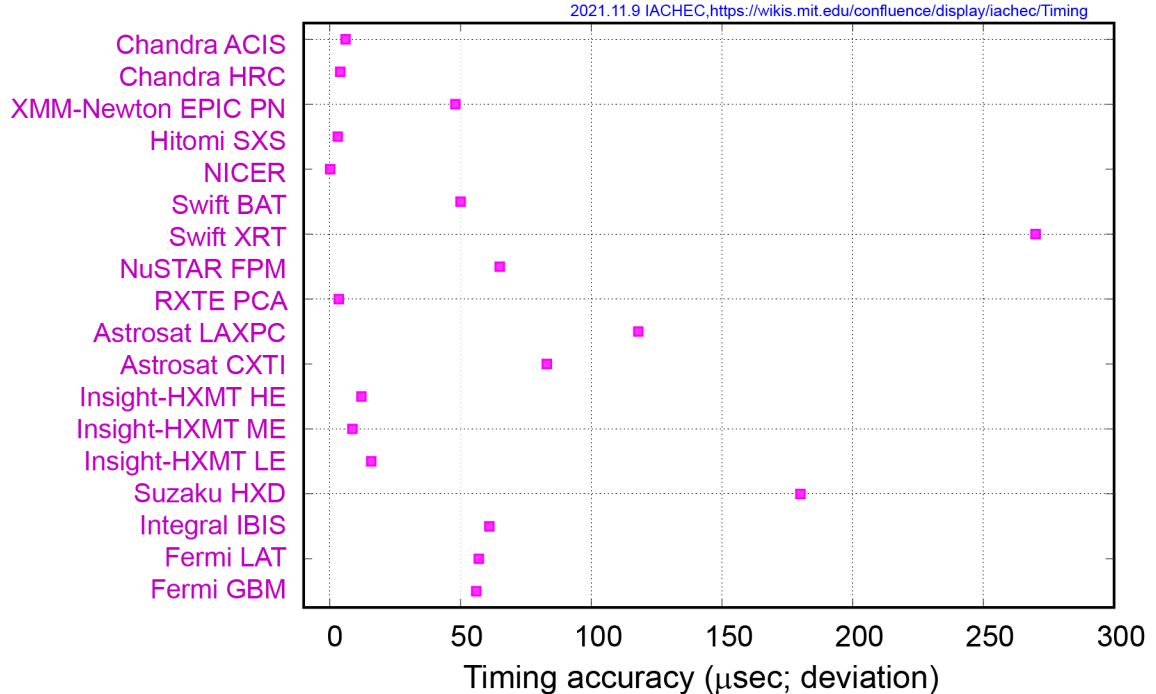
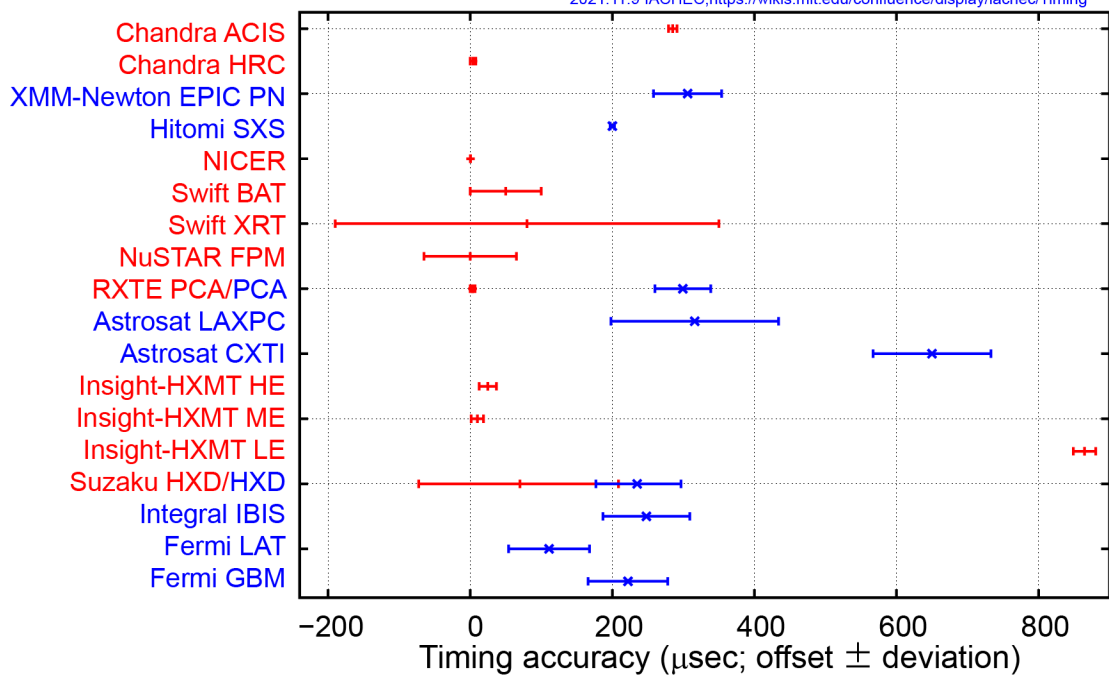
- Address: <https://iachec.org/timing/>
- Please ask Yuki to update.

1.5 IACHEC Timing Wiki page

- Address: <https://wikis.mit.edu/confluence/display/iachec/Timing>
- Instruction to get account to edit this Wiki page: <https://iachec.org/iachec-wiki/> (Ask Eric)
- Do you have some trouble getting an account?

2. Activity I: Summary Table of Timing Performance/Calibration

- **Purpose:**
 - gather the information on timing calibration / performance of multiple missions.
- Please see <https://wikis.mit.edu/confluence/display/iachec/Timing>
- **Organizer:** Yuki
- **Status** last fall (color: red=offset, blue=deviation) (A/I) describe the definition

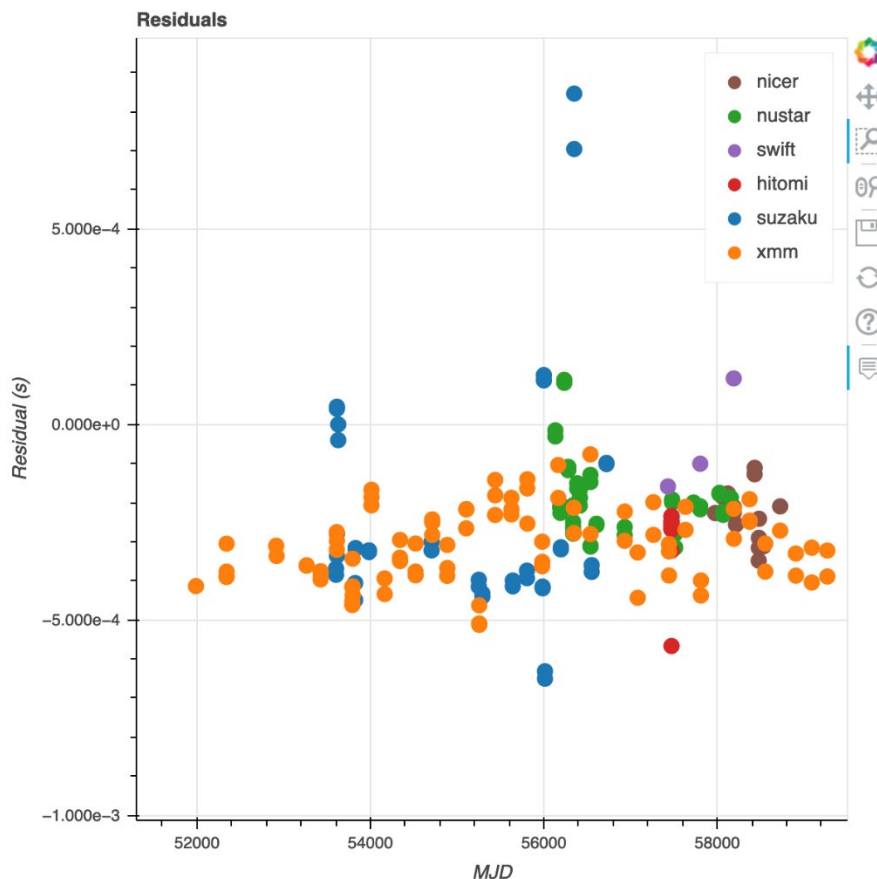


- **Status;**
 - No updates from last Fall.
- Missing
 - eROSITA ? (A/I) ask PoC
 - Please check the latest version on the Wiki.
- Discussion
 - Maintenance phase?
 - Check the definition of deviation for Swift XRT,

- Definition
 - ✧ Offset: offset time from Crab arrival time in X-ray (i.e., corrected of difference between radio and X-ray, but energy dependent ← we should describe the subtracted value also in the “note” column or new column.)
 - (note: Chandra offset is an engineering offset.)
 - ✧ Deviation: scatter of offset

3. Activity II: Systematic survey of Timing Calibration of multi missions using Crab pulsar

- **Purpose:** comparison of Crab ephemeris among instruments.
 - 1. Cross Calibration
 - 2. Systematic check of the delay of main pulse in the X-ray to Radio
Note: please see the presentation by Kuiper in IACHEC 2018.
- **Organizer:** Matteo
- **Status**
 - Plots from Matteo (15 Oct 2021)



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- **Action Item**
 - Add mission?
 - ✧ Please add the barycenter event fits file (DE430, not DE200) to Matteo to the repository!
 - <https://drive.google.com/drive/folders/15Zoz3M7BkeoC33ip3ezP0kWXLOtcS94C?usp=sharing>
Need your Google account (Matteo will give you permission)
 - list up the notes for outliers.
 - Matteo will add the IXPE. Matteo found some problem on ephemeris.
 - Computing environment: 5TB + CPU

4. Activity III: Systematic study of the effects of dead time etc on timing products

- **Purpose:** check the effect of the following detector's behavior on folded light curve/power spectrum, delta-time spectrum, etc
 - Time resolution
 - Absolute timing accuracy
 - Dead time (and/or grade selection for calorimeter)
 - Background events
 - Good time interval etc
- **Status:**
 - Notes on previous work: Pile-up in Chanda, dead time studies on NuSTAR.
- Short Report 1) Estimation of timing accuracy with pulsars (Minami)
Minami checked the feasibility of in-orbit timing calibration with PSR B0540 with XRISM.
- Short Report 2) Distortion of pulse profile by the grade selection (Takumi)
Takumi show the effects of the grade selection for Resolve on folded light curve.
- Discussion
 - Very short report on Grade selection of XRISM Resolve
 - To be added.
 -

5. Presentation by Matteo (timing tools)

- Tools for timing + spectral analyses, STINGRAY (20min)
<https://stingray.science/>

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