



Title: IACHEC Timing WG telecom

Date: 15 Oct 2021

Time: 13:00 GMT = 22:00 JST = 9:00 EDT = 6:00 PDT = 15:00 CEST

Zoom: <https://zoom.us/j/97585823704> (passcode: iachec)

Notes (editable):

https://suitc-my.sharepoint.com/:w/g/personal/terada_mail_saitama-u_ac_jp/EetHyDE1-WBEhQnZNV7Cj4wBustSU1PgWvOkR5PQGALpXw?e=F6nHNs (password=iachec#time)

Participants: Yuki, Minami, Craig, Vinay, Lucien, Matteo, Amy, Felix, Dipankar

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

- 2021 IACHEC Fall WG meeting
November 8-10, 09:00-11:00 EST = 14:00-16:00 UTC
- Timing session is now tentatively planned on 9 Nov

1. Working Group Communication (short announcement)

1.1 Current Members & Mission

Yukikatsu Terada (Suzaku,Hitomi, XRISM), & his student Minami Sakama (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)

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

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ttanaka@konan-u.ac.jp
makoto.sawada@riken.jp,
srosen@sciops.esa.int,
dipankar@iucaa.in,
sakama@heal.phy.saitama-u.ac.jp,
L.M.Kuiper@sron.nl,
mjf@mpe.mpg.de,
giancarlo.cusumano@inaf.it,

from Vinay: please add Arnold Rots (arots@cfa.harvard.edu)

1.3 IACHEC Slack

- 10 members on IACHEC/Timing Slack at this moment
 - Yuki, Vinay, Felix, Gulab, Katja, Matteo, Simon, Teru, Takaaki, Xiaobo
- Please Join.(invitation this week)
 - https://join.slack.com/t/iachec/shared_invite/zt-ws9f8flh-ExZOxmjT5IZ9W5Uc90JuJw

1.4 IACHEC Timing WWW

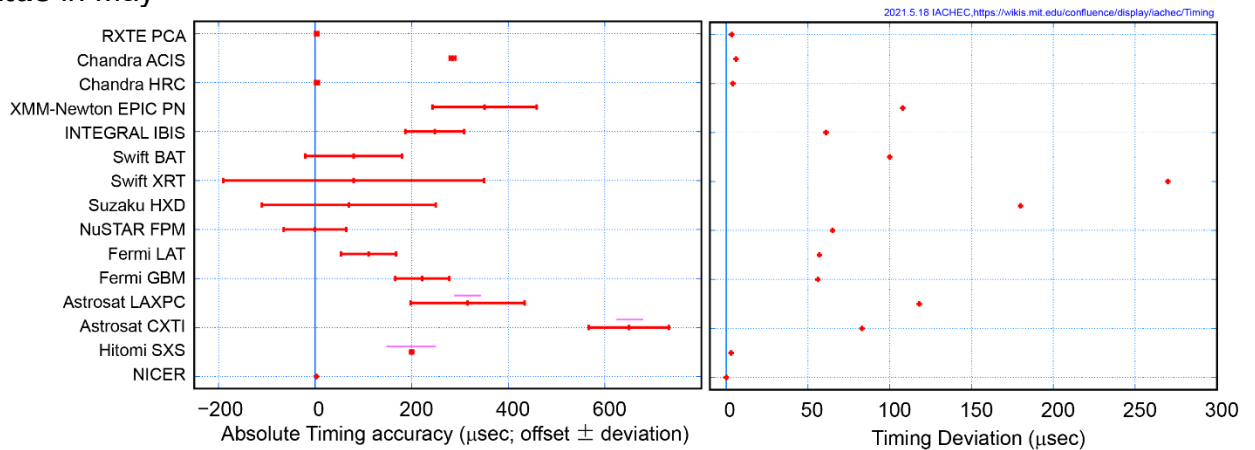
- Address: <https://iachec.org/timing/>
- Please ask Yuki to update.

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

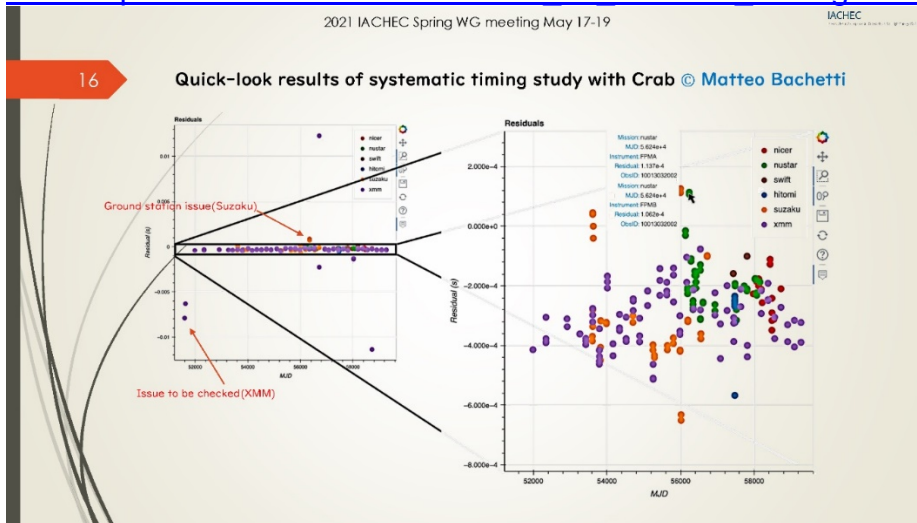
- **Purpose:**
 - gather the information on timing calibration / performance of multiple missions.
- Please see <https://wikis.mit.edu/confluence/display/iachec/Timing>
- **Organizer:** Yuki
- **Status in May**



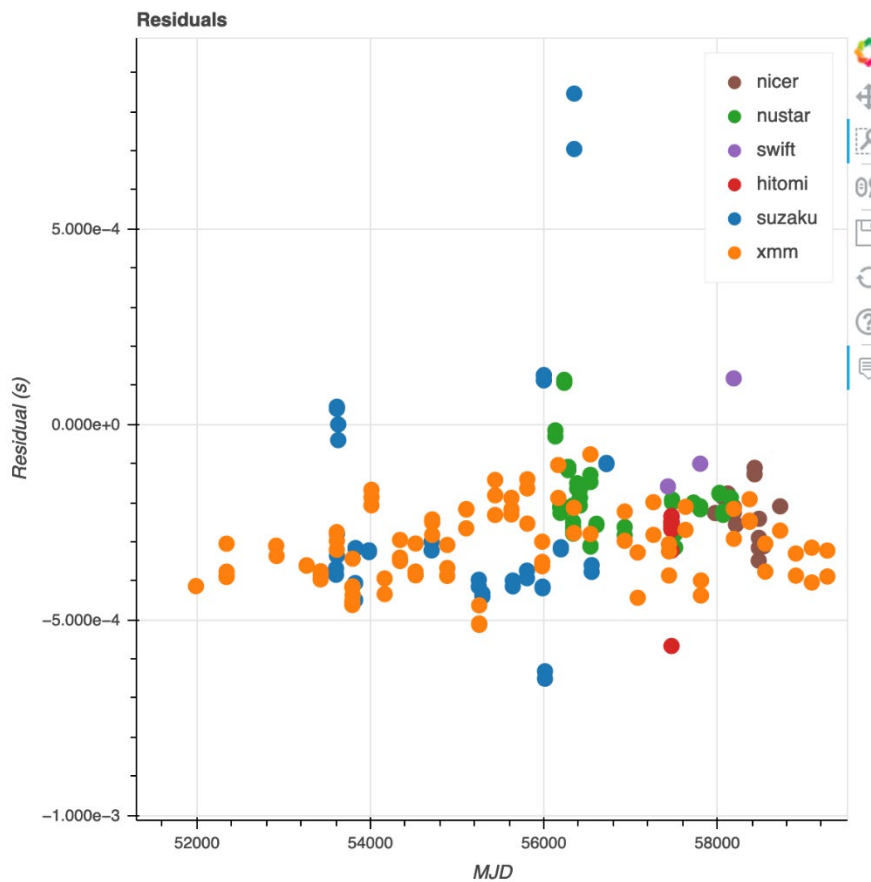
- **Status;** two updates from May 2021
 - RXTE/HEXTE, calibration target column was updated
 - Insight-HXMT added
- Missing
 - eROSITA ?
 - Please check the latest version on the Wiki.
- Discussion
 - What's missing? What's unclear? What's next?
 - The number in the plot comes from the table. But, this plot is misleading because the definition of the timing accuracy and offset are different among instruments. (for example, we should identify whether the value includes the intrinsic timing offset from the radio or not.)
 - Please add the notes on the "notes" column. ← (if you cannot update the wiki, please send the information to Yuki)
 -
 - The plot is simply useful for the status report, but noting that the definition is different.

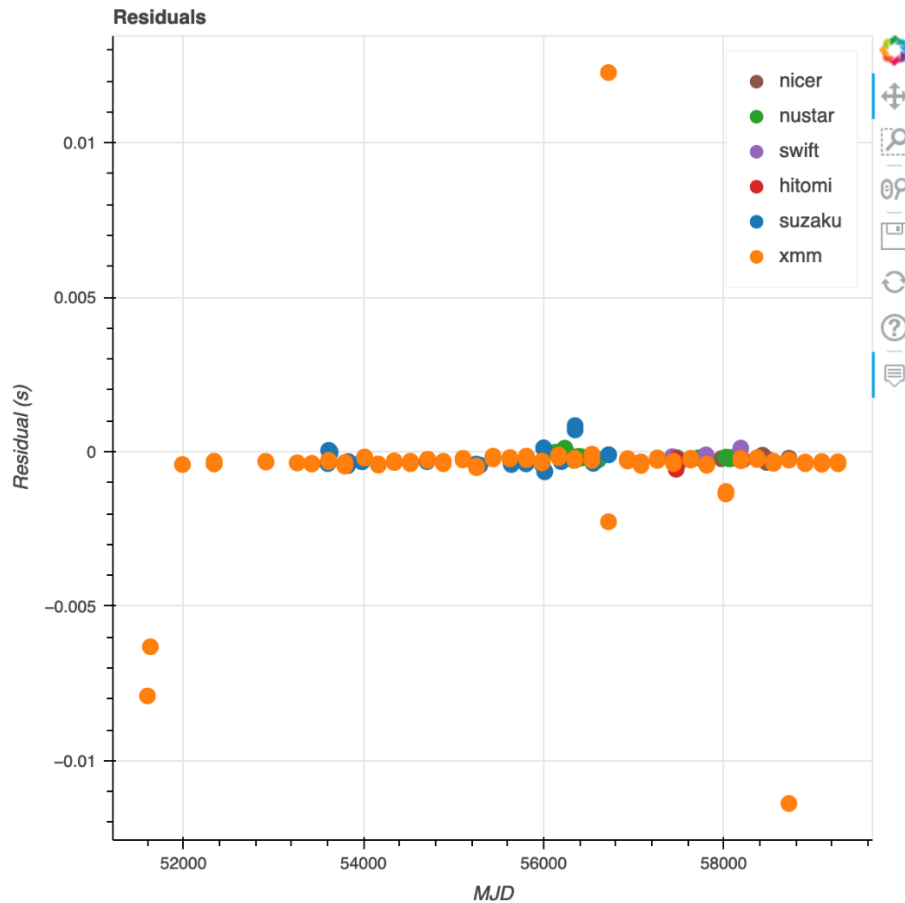
3. Activity II: Systematic survey of Timing Calibration of multi missions using Crab pulsar

- **Purpose:** comparison of Crab ephemeris among instruments.
 - 1. Cross Calibration
 - 2. Systematic check of the delay of main pulse in the X-ray to RadioNote: please see the presentation by Kuiper in IACHEC 2018.
- **Organizer:** Matteo
- **Status**
 - In May: see page 16 in https://iachec.org/wp-content/presentations/2021/20210517_19_IACHEC_TimingWGreport.pdf



- Plots from Matteo (15 Oct 2021)





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- Next step
 - 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)
 - Comment: we cannot put the Crab data for INTEGRAL SPI/ISGRI for example. → In that case, please provide the folded lc.
 - Another action item was to list up the notes for outliers.

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:**
 - Yuki will start slowly with his student(s).
- Discussion
 - Notes on previous work: Pile-up in Chanda, dead time studies on NuSTAR.

Thank you!

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