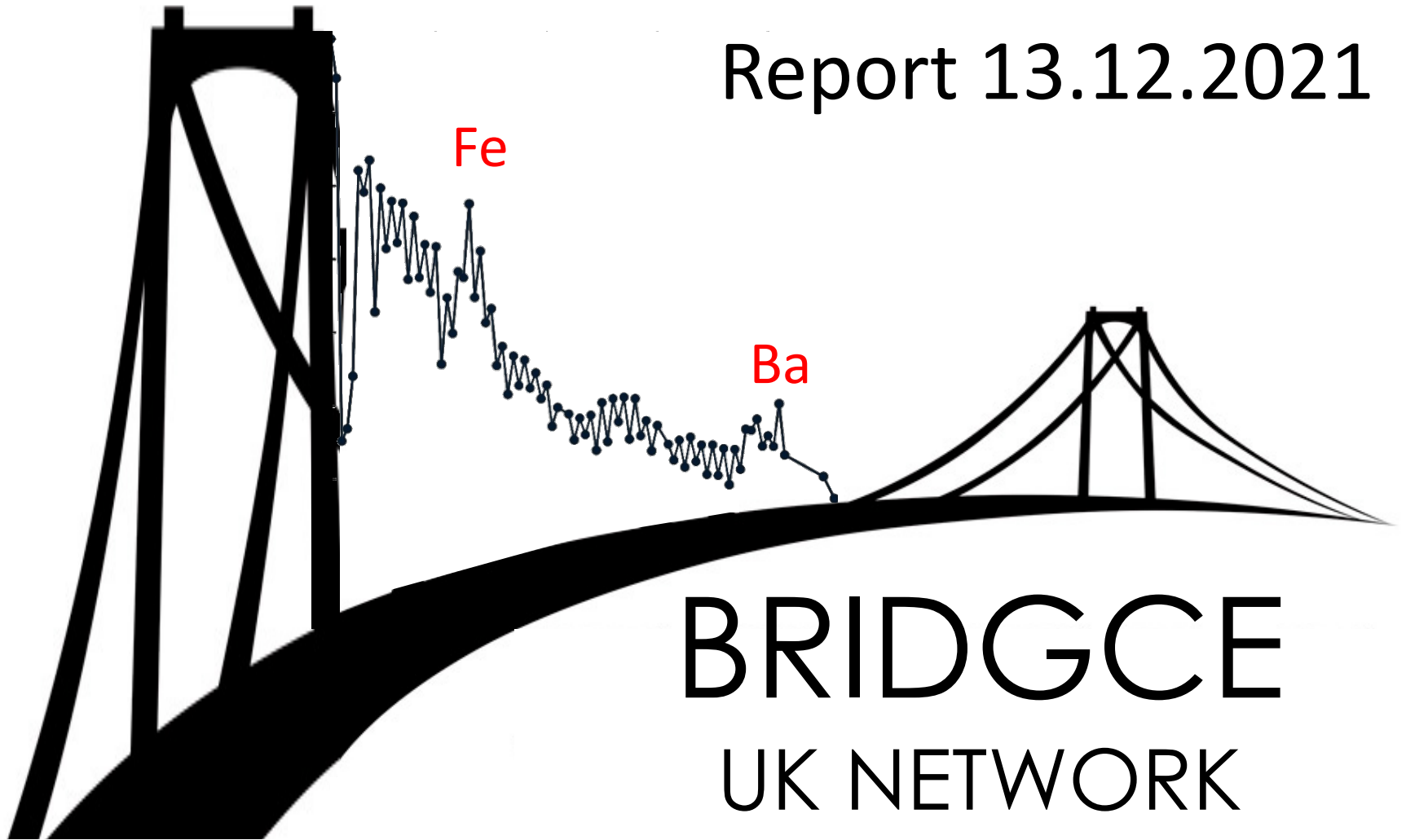


BRIDGCE: BRIdge the Disciplines related to the Galactic Chemical Evolution

Report 13.12.2021



<http://bridgce.ac.uk>

BRIDGCE Network

- Started in 2013, led by Raphael Hirschi (Keele)
- Research network on nuclear astrophysics, similar to EU ChETEC and US JINA
- **75 researchers from 19 UK universities;** to join, just sign up at <http://bridgce.ac.uk>
- Chair: Chiaki Kobayashi (Hertfordshire), since 2019
- Aim: knowledge transfer between different disciplines

Multi-discipline

Nuclear Astrophysics

Reaction Rates: GSI-
FAIR, CERN-nToF, Ganil

Stellar Physics

Stellar Mass Loss
Stellar Evolution
Supernovae
Nucleosynthesis
Rotation vs Binary

The Milky Way

Galactic
Archaeology (GA)
surveys: Gaia,
APOGEE, HERMES-
GALAH, 4MOST,
WEAVE, MSE...

External Galaxies

Integral Field Unit
(IFU) surveys:
SAURON, MaNGA,
CALIFA, SAMI, Hector,
KMOS, MUSE,
NIRSpec/JWST!

Steering committee

- Chiaki Kobayashi (Hertfordshire), chair
- Clare Worley (IoA Cambridge) for observations
- **Stuart Sim (Belfast) for supernovae/transients [NEW]**
- Raphael Hirschi (Keele) for stellar evolution
- Alison Laird (York) for nuclear physics

17 new members – Welcome!

- Janet Bowey, Mike Edmunds, Mikako Matsuura, Freeke van de Voort (Cardiff); Alex Cameron (Oxford), Soham Chakraborty (York), Florence Concepcion (Imperial), Emma Curtis-Lake (Webb Fellow, Herts), James Gillanders (Belfast), Alex Hall-Smith (York), Connor Hayden-Pawson (KICC Cambridge), Erin Higgins (BRIDGCE PDRA, Armagh), Dyna Ibrahim (Herts), Justus Neumann (Portsmouth), Daniel Whalen (Portsmouth), Kate Womack (Hull), Rob Yates (Surrey)
- blue – giving a talk at AM2021

BRIDGCE Consortium for funding

- Continuously funded by STFC in 2014, 2017, 2020
- In the 2020 round, 2 PDRAs funded, out of 5 projects (40% success rate!)
- **The next 2023 round**
 - Eligibility: academic members of staff (lecturers or equivalent) or hold a Fellowship, such as an STFC or Royal Society Fellowship, won through open competition.
 - if you are interested in contact the PI (Chiaki Kobayashi)
 - Kick-off meeting will be at NAM 2022.

BRIDGCE activities 2021-2022

- NAM parallel session 2021, July, Bath/online, co-
led by **Umberto Battino** (Edinburgh→Hull), **Payel
Das & Rob Yates** (Surrey), 1.5 hrs x 3 on 23 July
- NAM parallel session 2022, 11-15 July, Warrick,
proposal led by **Erin Higgins** (Armagh), “Bridging
stellar interactions with galactic chemical
evolution, nucleosynthesis and dust”, 1.5 hrs x 3
- AM 2022 winter, hybrid?
- Support for **students/ECRs**, e.g., opportunities of
oral presentation and organizing meetings
- Monitoring **diversity and inclusion** (more later)
- Website may be updated, volunteer wanted...

Some News

- BRIDGCE plans to join US-based **IReNA** International Research Network for Nuclear Astrophysics, see talk by the Director Hendrik Schatz on Wed.
- EU ChETEC-INFRA, EU Community of Research Infrastructures, led by Hirschi, see 2020 annual report on web.
- All STFC Webb Fellows, **Emma Curtis-Lake** (Herts) & **Olivia Jones** (Edinburgh), are in BRIDGCE 😊
- **Armagh**: former BRIDGCE PDRA **Andreas Sander**, Emmy Noether Research Group Leader, Heidelberg, Germany
- **Keele**: **Laura Scott** completed her thesis in the last 12 months. **Etienne Kaiser** submitted his thesis and just passed his viva. 2 PDRAs starting in spring (1 STFC + 1 ChETEC-INFRA)
- **Belfast**: **Prof. Stephen Smartt**, Herschel Medal Winner, 2021, for pioneering work on astrophysical transients leading to ground-breaking progress in understanding core-collapse supernovae and kilonovae
- **Herts**: Kobayashi, Leverhulme Research Fellowship (2 yrs)

r-Process elements from magnetorotational hypernovae

D. Yong^{1,2}✉, C. Kobayashi^{2,3}, G. S. Da Costa^{1,2}, M. S. Bessell¹, A. Chiti⁴, A. Frebel⁴, K. Lind⁵, A. D. Mackey^{1,2}, T. Nordlander^{1,2}, M. Asplund⁶, A. R. Casey^{2,7}, A. F. Marino⁸, S. J. Murphy^{1,9} & B. P. Schmidt¹

The event, called a magnetorotational hypernova, is a spinning, super-energetic supernova created by the collapse of a massive star.

Dr Chiaki Kobayashi, co-author and Reader in Astrophysics at the University of Hertfordshire, said:

“ We would like to understand where we come from. The elements which compose our human bodies come from stars. But what about mobile phones, which contains previous metals such as copper, silver, and gold?

Ancient stars we can observe only with big telescopes are amazing as they have recorded the history of the universe like fossils in archaeology. The discovery of this star is proof that these elements come from an explosion of a massive star, probably 25 times more massive than the sun, about 13 billion years ago.

Jewellers should thank their lucky (dead) stars

The research conducted by Dr Kobayashi was supported by the Science and Technology Facilities Council (STFC), part of UK Research and Innovation. It was supported through a nuclear astrophysics consortium [Bridge the Disciplines related to the Galactic Chemical Evolution](#).



UK Research
and Innovation

Thank exploding



The ramp-up of interstellar medium enrichment at $z > 4$

Fluorine

M. Franco¹✉, K. E. K. Coppin¹, J. E. Geach¹, C. Kobayashi¹, S. C. Chapman^{2,3}, C. Yang⁴,
E. González-Alfonso⁵, J. S. Spilker⁶, A. Cooray⁷ and M. J. Michałowski⁸

 Select Language (en) ▾

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eso2115 -
Astronomy
of fluorine
4 November 2021

BBC

LIVE BAYFORDBURY

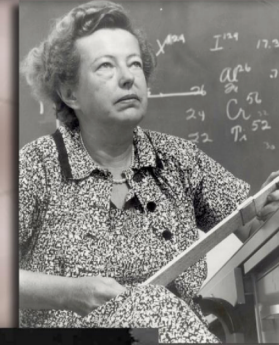
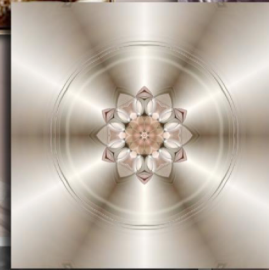
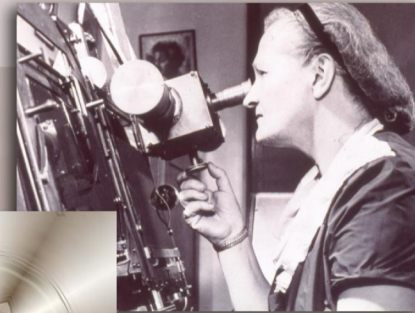
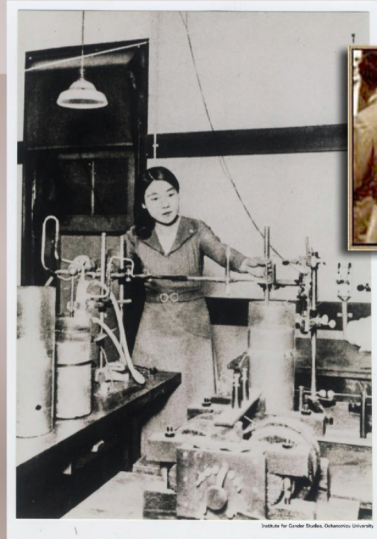
8/11/2021 Look East



<https://www.eso.org/public/news/eso2115/>

2022 Calendar; printout order <https://forms.office.com/r/CSVqFs6fDj>
(to Hirschi); pdf download <http://bridgce.ac.uk/news/2022-calendar-of-women-scientists-who-made-nuclear-astrophysics>

2022 Calendar



presented by COST Action ChETEC

Women Scientists Who Made Nuclear Astrophysics

Gender Statistics

- $25/75=33.3\%$ in BRIDGCE members
- $10/28=35.7\%$ for speakers at AM2021
- $2/4=50\%$ for invited speakers
- $2/4=50\%$ for session chairs
- $1/5=20\%$ for AM2021 organizers
- $5/8=63\%$ for NAM2022 session proposal
- $3/5=60\%$ in BRIDGCE steering committee

BRIDGCE annual meeting 2021

- Organizers:
 - **Benjamin Wehmeyer** (Herts / Konkoly Observatory, Budapest) - chair
 - **Federico Rizzuti** (Keele)
 - **Soham Chakraborty** (York)
 - **Umberto Battino** (Hull)
- Thanks in advance to all speakers and participants
- Any feedback: e-mail c.kobayashi@herts.ac.uk
- This slides will be available at <http://bridgce.ac.uk>