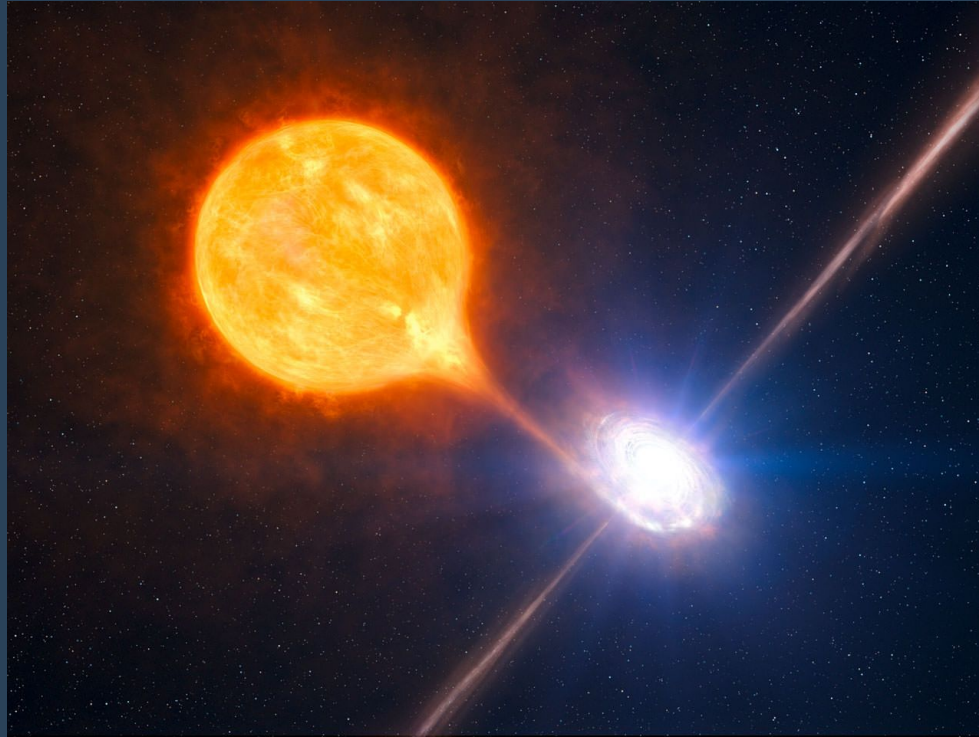


Waiting points on type I x-rays burst

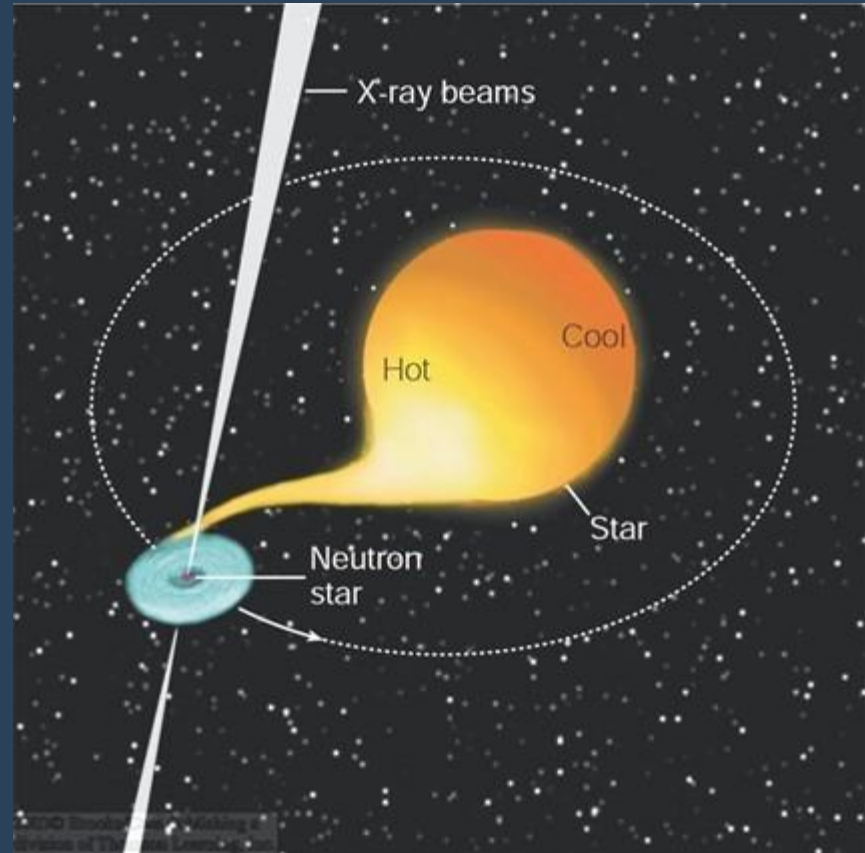
Selene Bárbara Parra Aedo

What is a Type I x-ray burst?

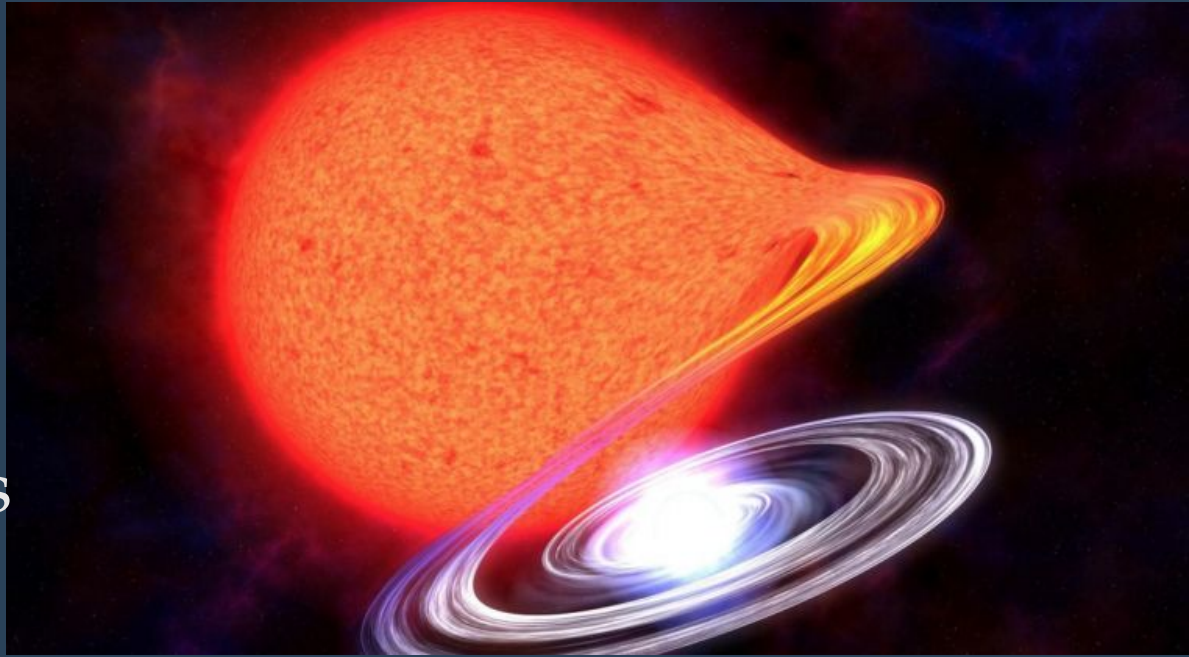


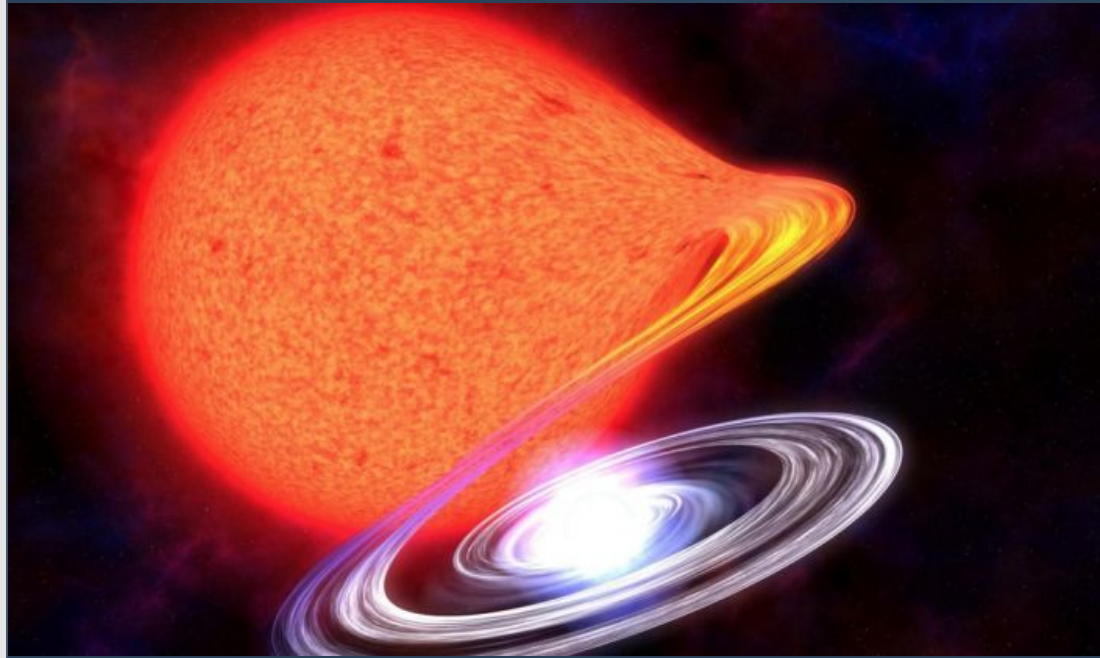
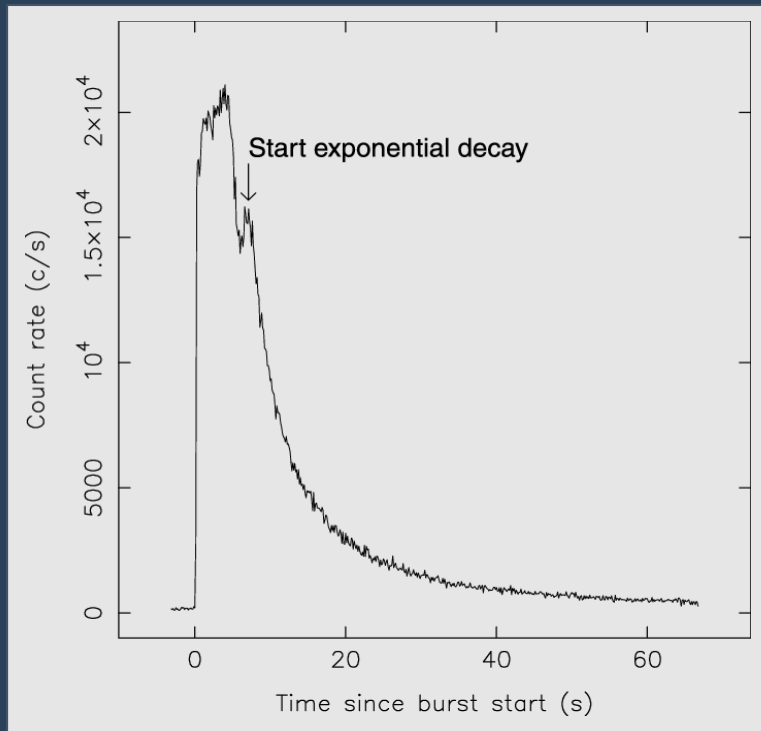
Type I x-rays burst

- It occurs in a binary systems of a neutron star that accretes hydrogen-rich material from a low-mass companion (Red-Giant or Main-seq. star)
- It happens at the surface of the neutron star
- Peak in 1 to 10 seconds, tail lasts 10 seconds to several minutes and the recurrence is 1 to several hours



When sufficient mass
accumulate in the
surface of the
neutron star...

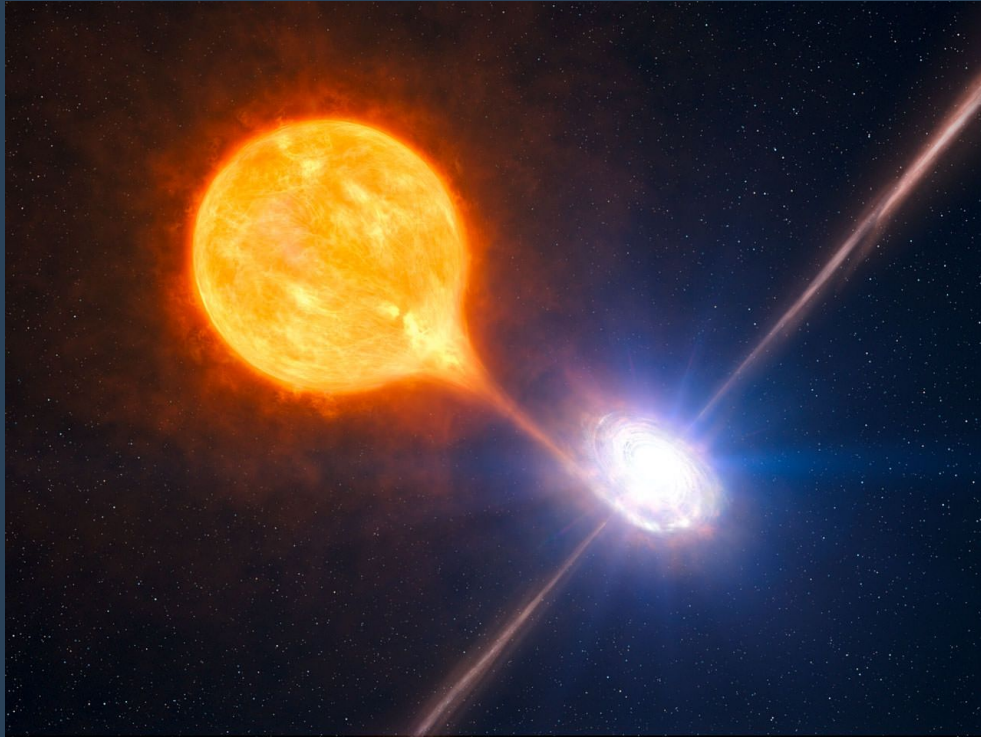


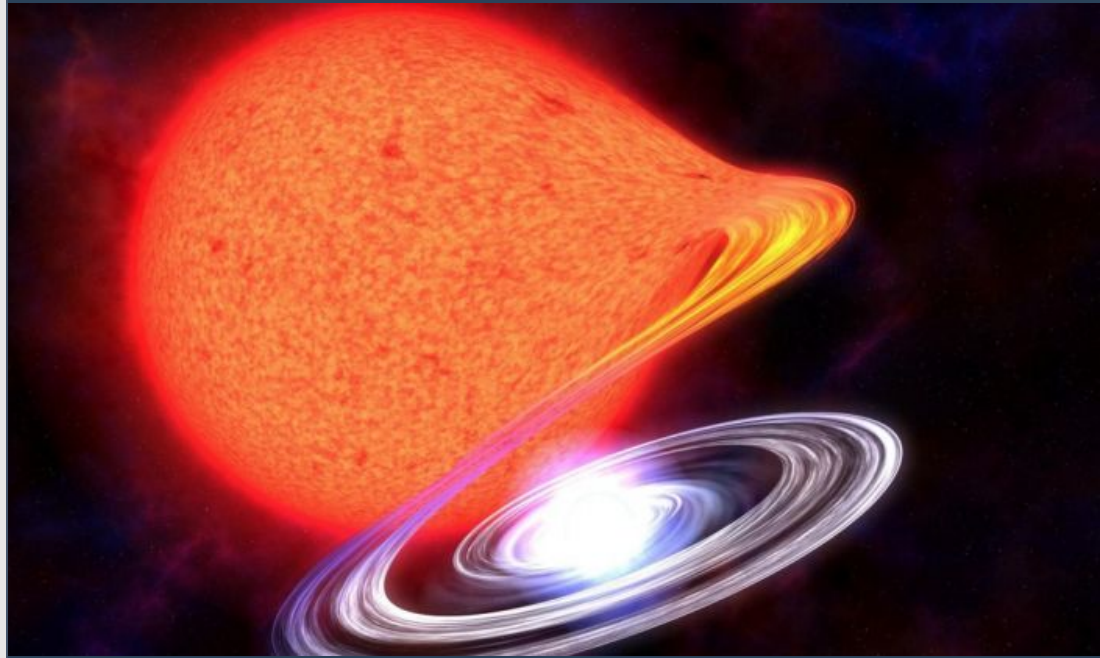
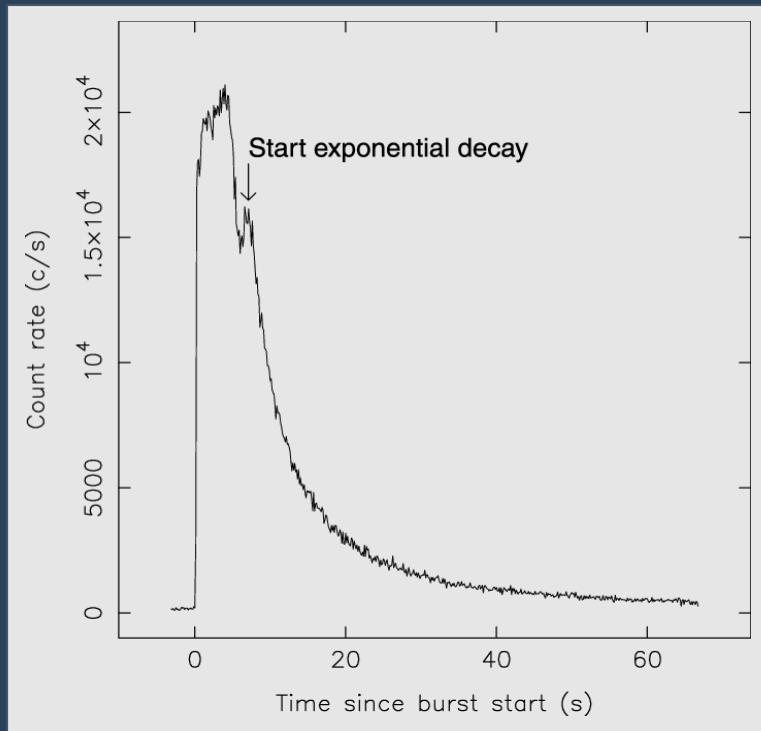


A explosion occurs, a short burst of x-rays is expelled from the neutron star

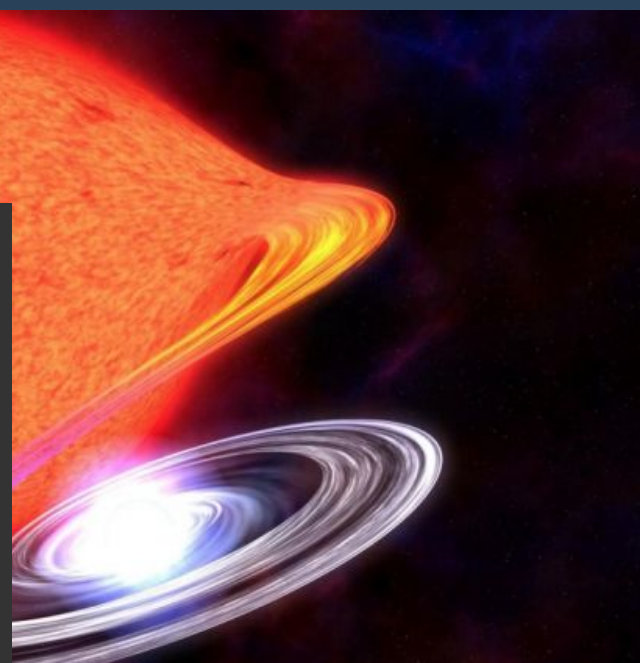
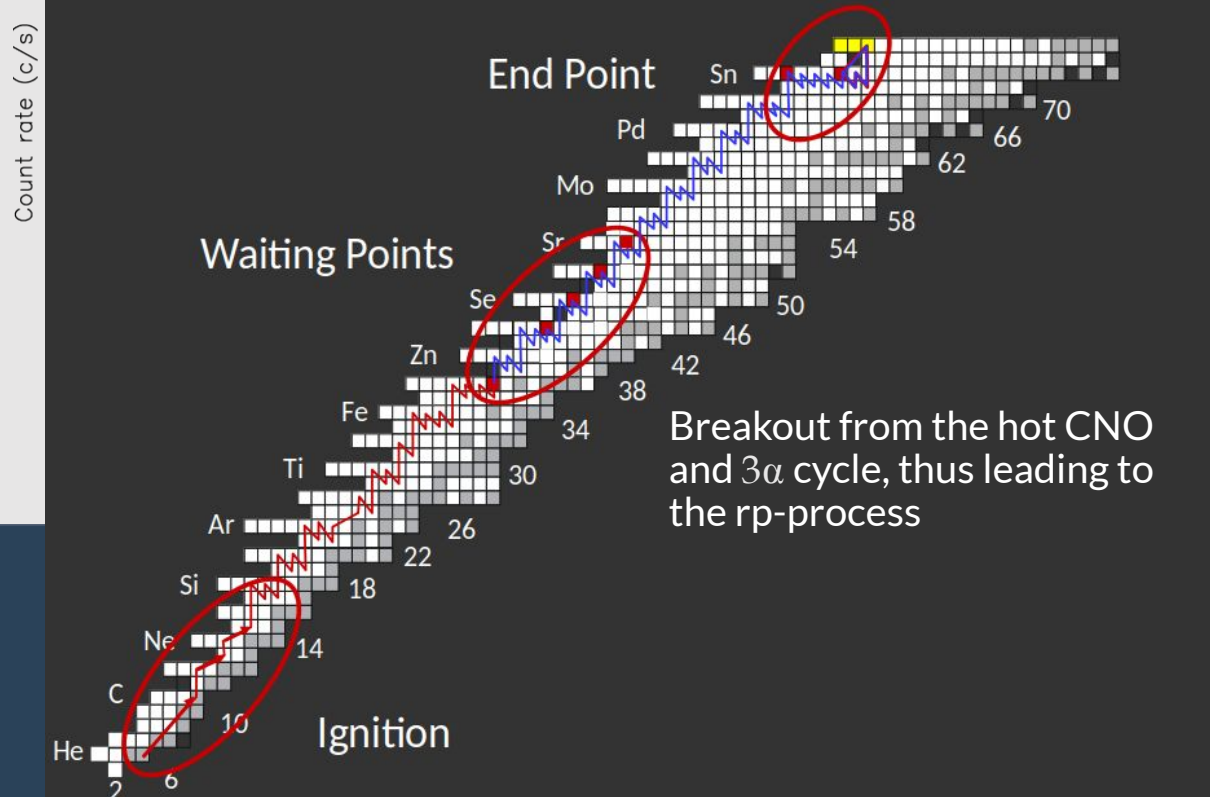
But... how did it happened?

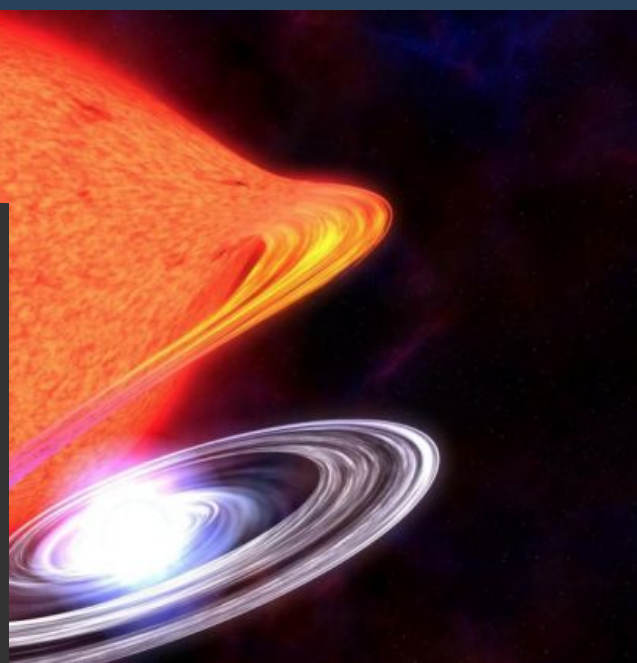
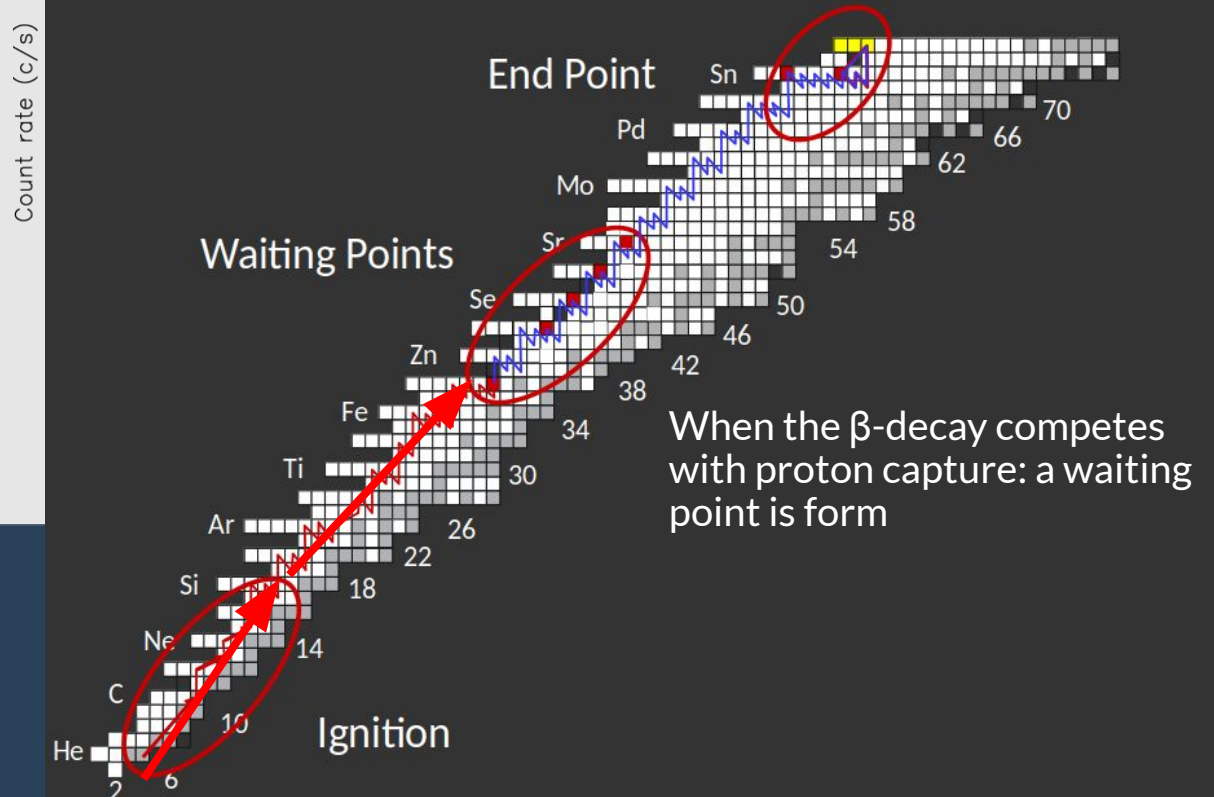
Physic model of a Type I x-ray burst



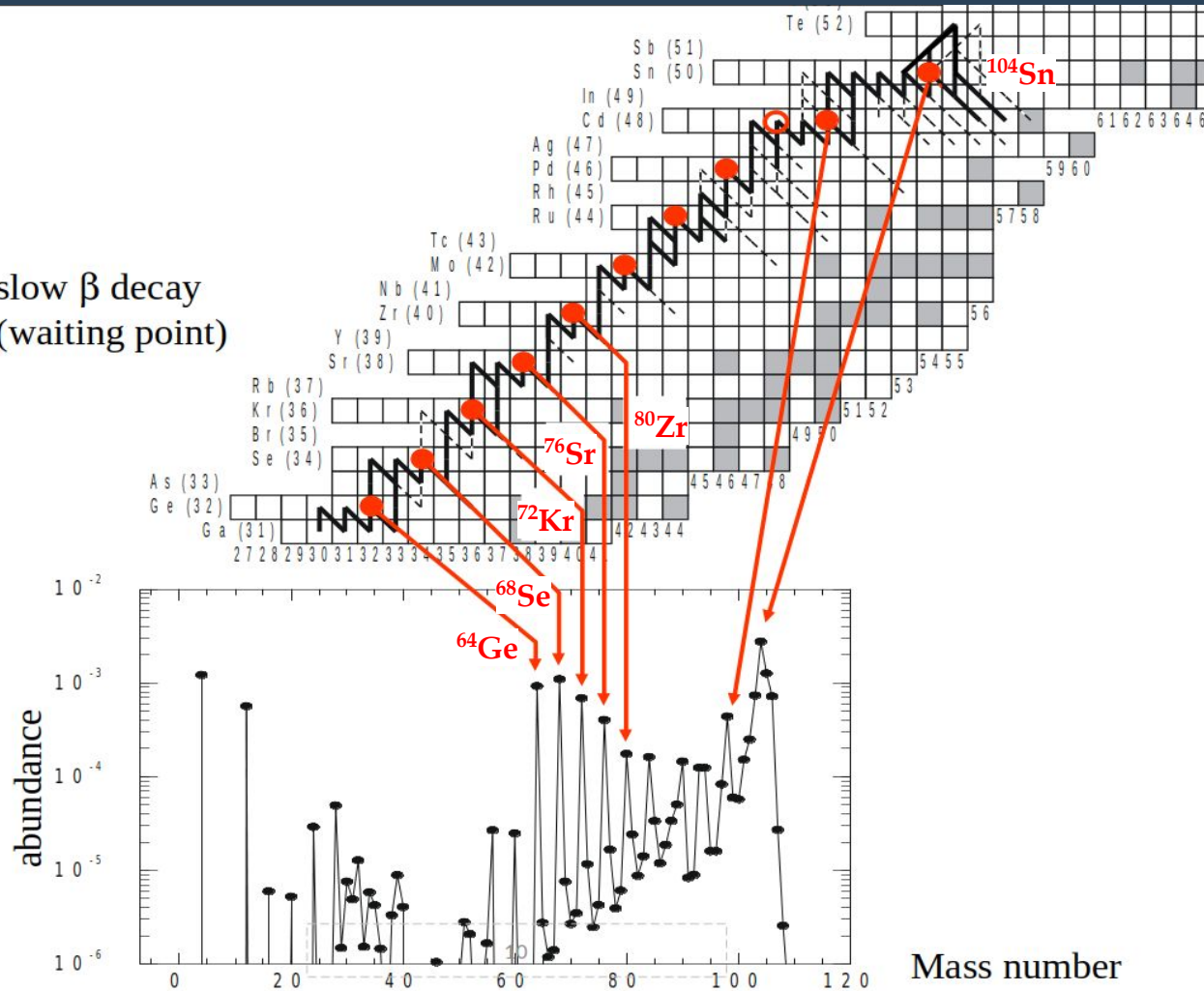


The only observable of this type of stellar event are the x-ray signals

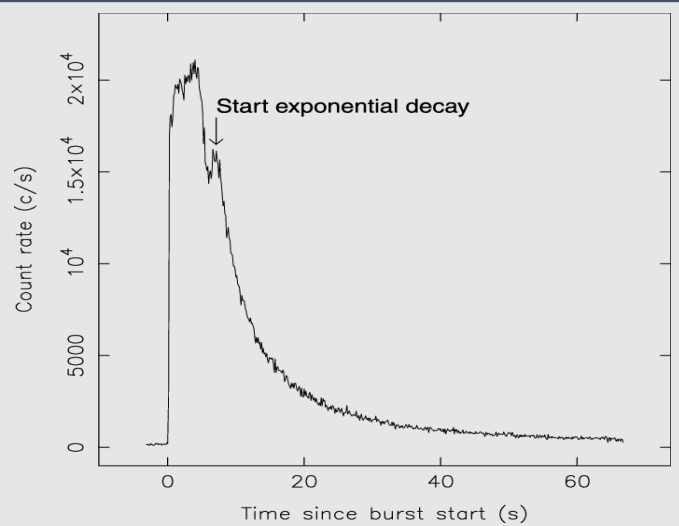




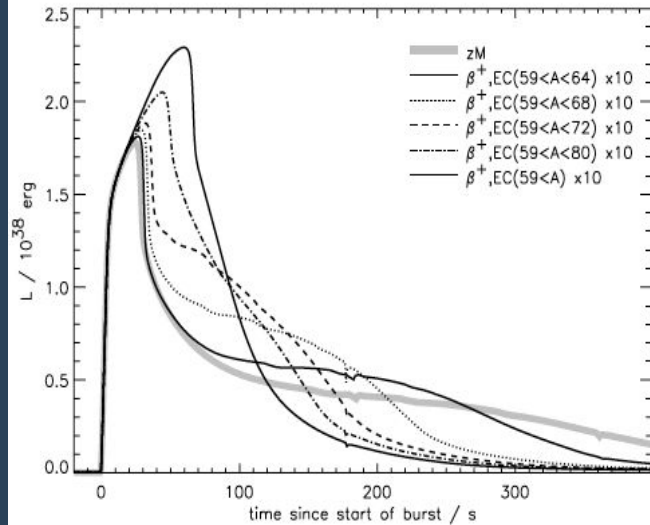
● slow β decay
(waiting point)



These waiting points determine the “ashes” of the reaction, thus affecting the condition of the next burst

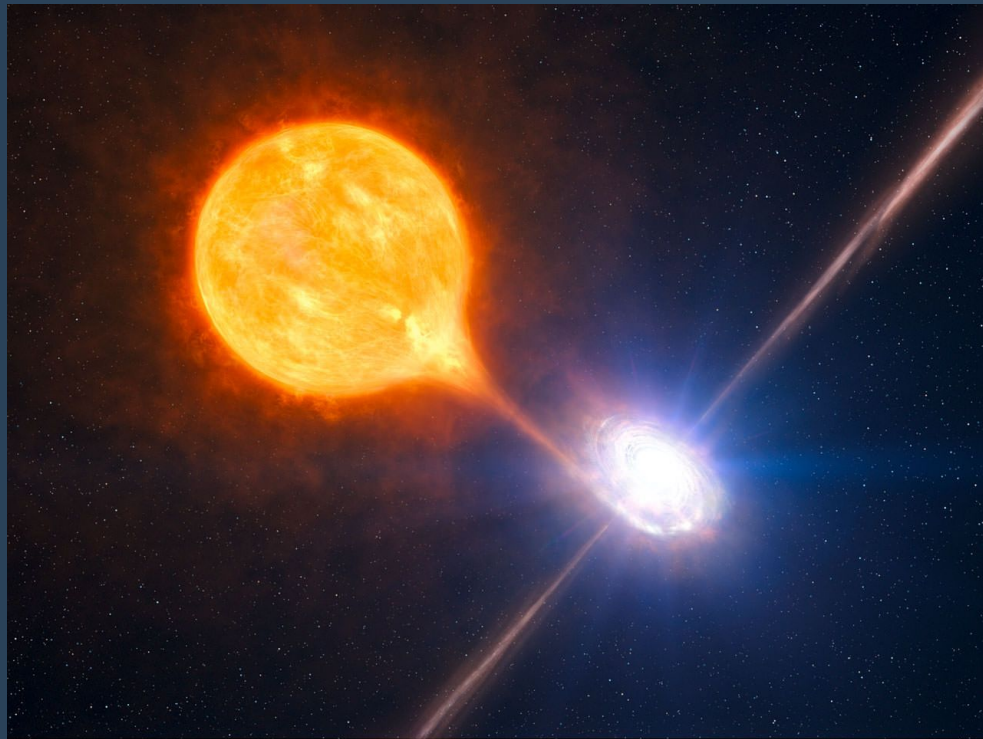


Each isotope left by the “ashes” of the previous explosion affect how the next would behave.



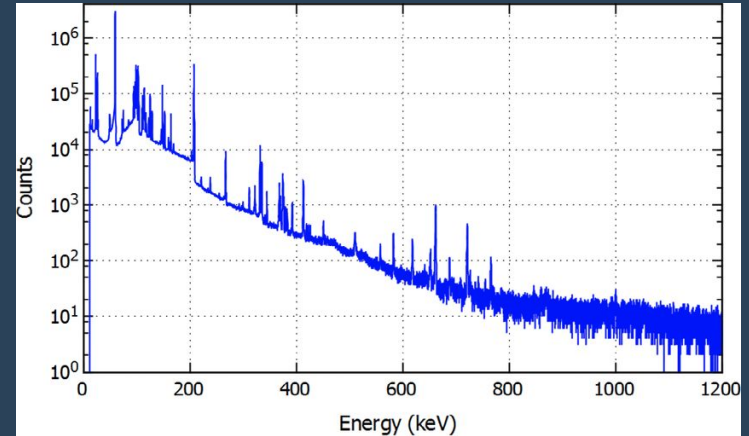
To get a better understanding of the reaction a good knowledge of the nuclear characteristics of these isotopes is needed

Experimental setup

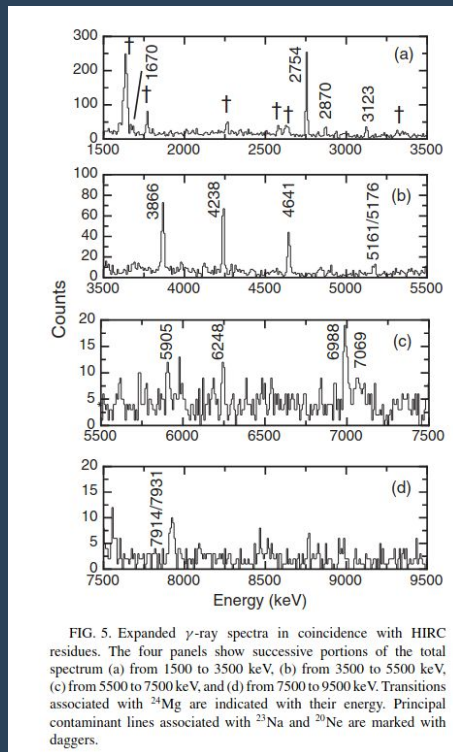


How to measure gamma rays?

Germanium detectors

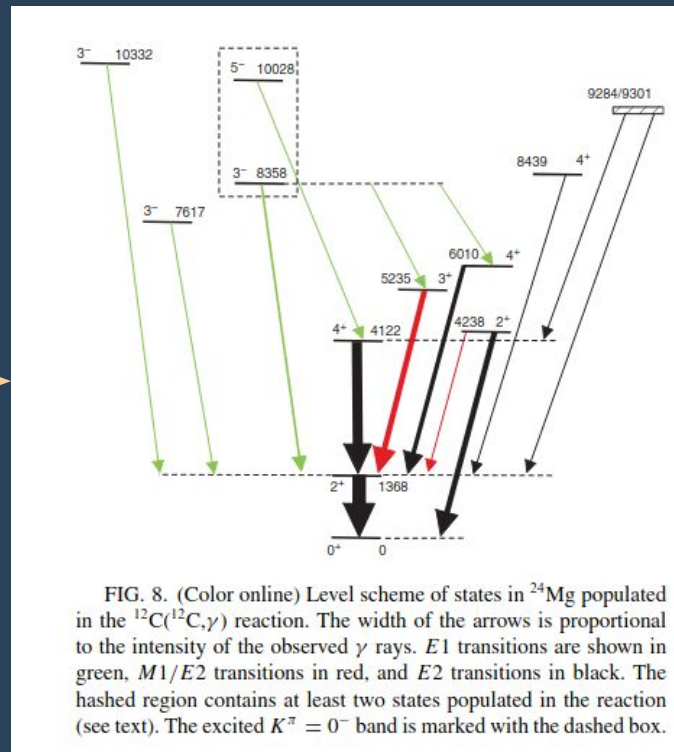


How to measure gamma rays? Germanium detectors



High-resolution spectroscopy of decay pathways in the $^{12}\text{C}(^{12}\text{C},\gamma)$ reaction

DOI: <https://doi.org/10.1103/PhysRevC.84.044332>



Example: Germanium-64

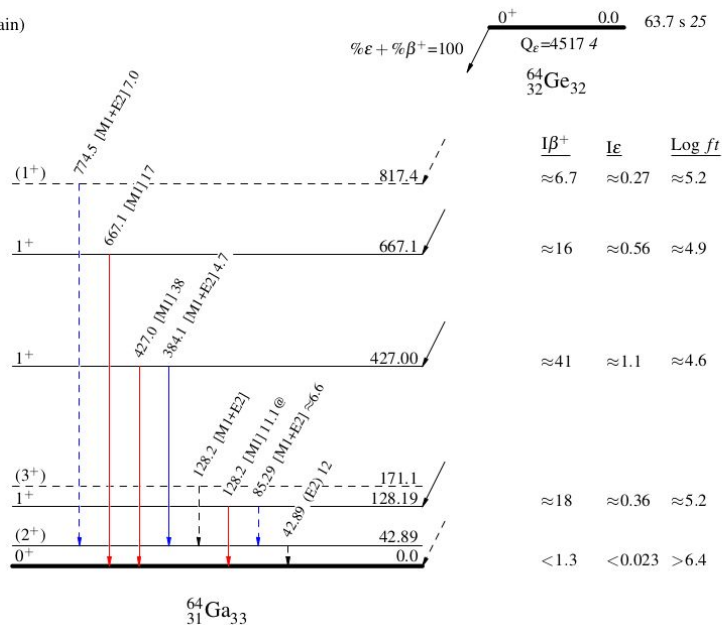
⁶⁴Ge ε decay (63.7 s) 1974Ro16

Decay Scheme

Intensities: $I_{(\gamma+ee)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - - γ Decay (Uncertain)

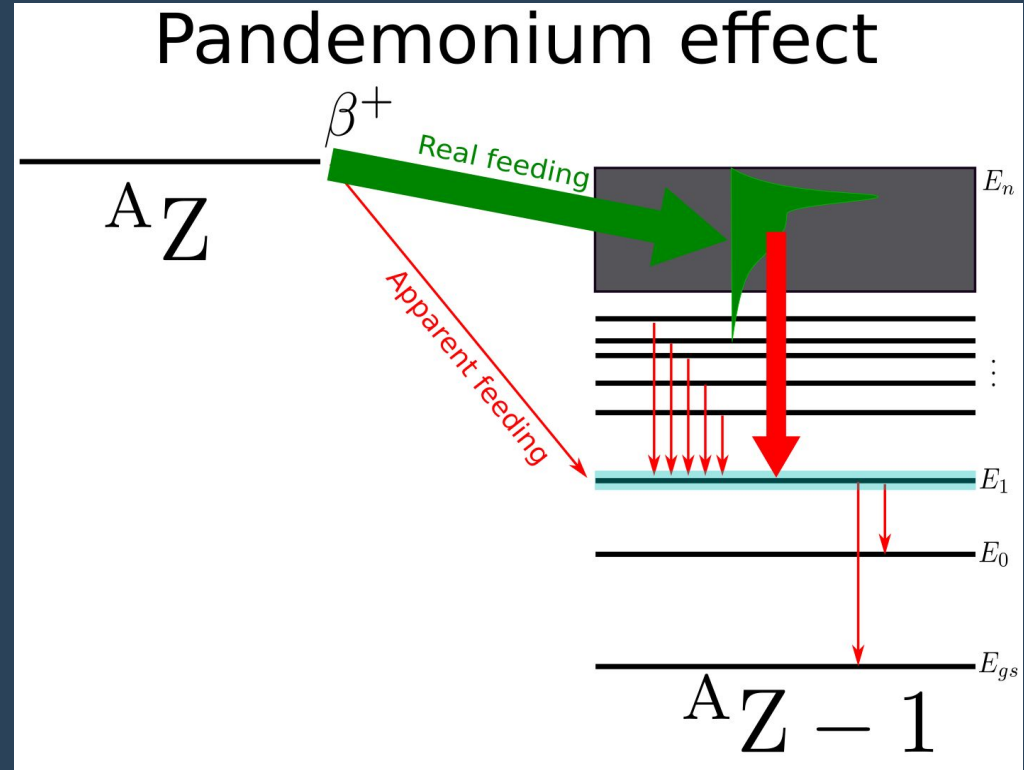


Huge gap between last known level (817 keV) and Q-value (4517 keV)

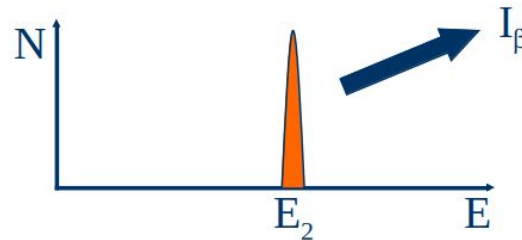
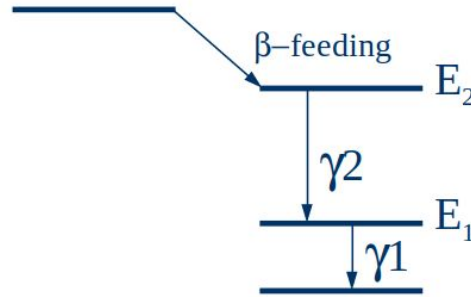
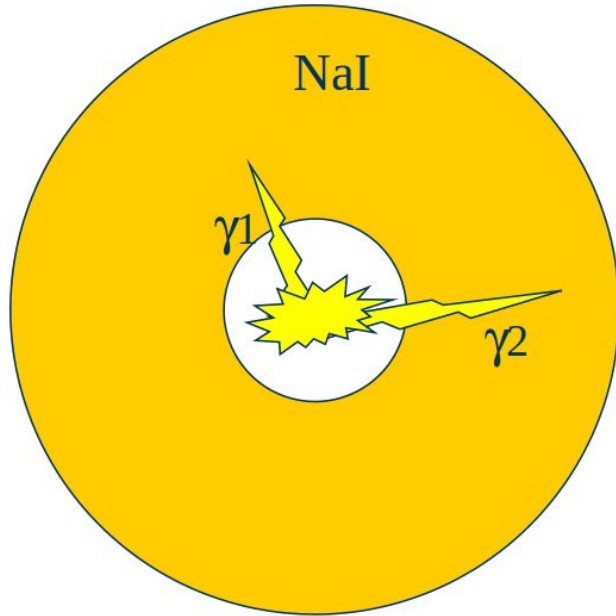
Pandemonium

happens in Isotopes with a sufficient large Q-value to have a quasi continuum of energy

Cascade of gammas from energy levels that are close one to another



Total Absorption Spectroscopy (TAS) technique



Instead of identifying each individual gamma ray the goal is to detect every gamma from the source.

The efficiency is close to 100%

Peaks in the spectrum are related to a cascades of gammas rather than individual gammas

Comparative between high resolution and TAS measurements

High resolution measurement

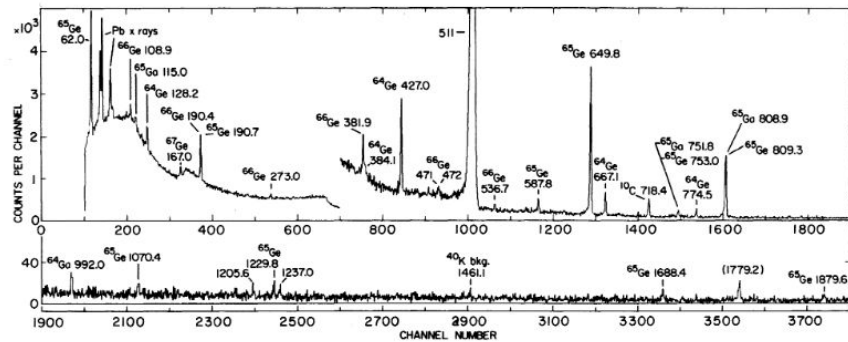
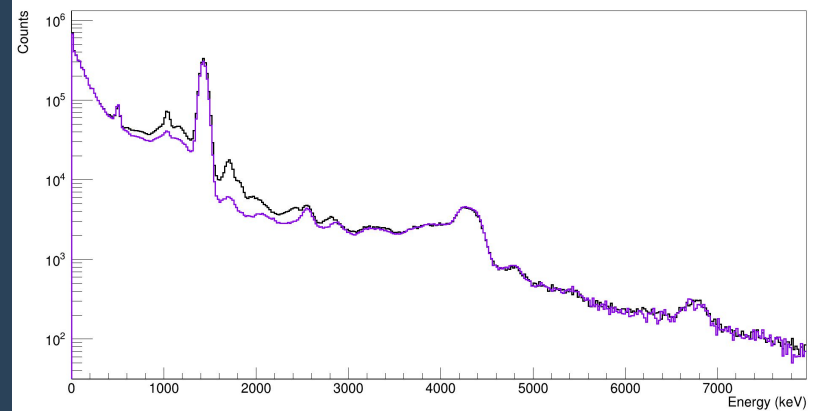
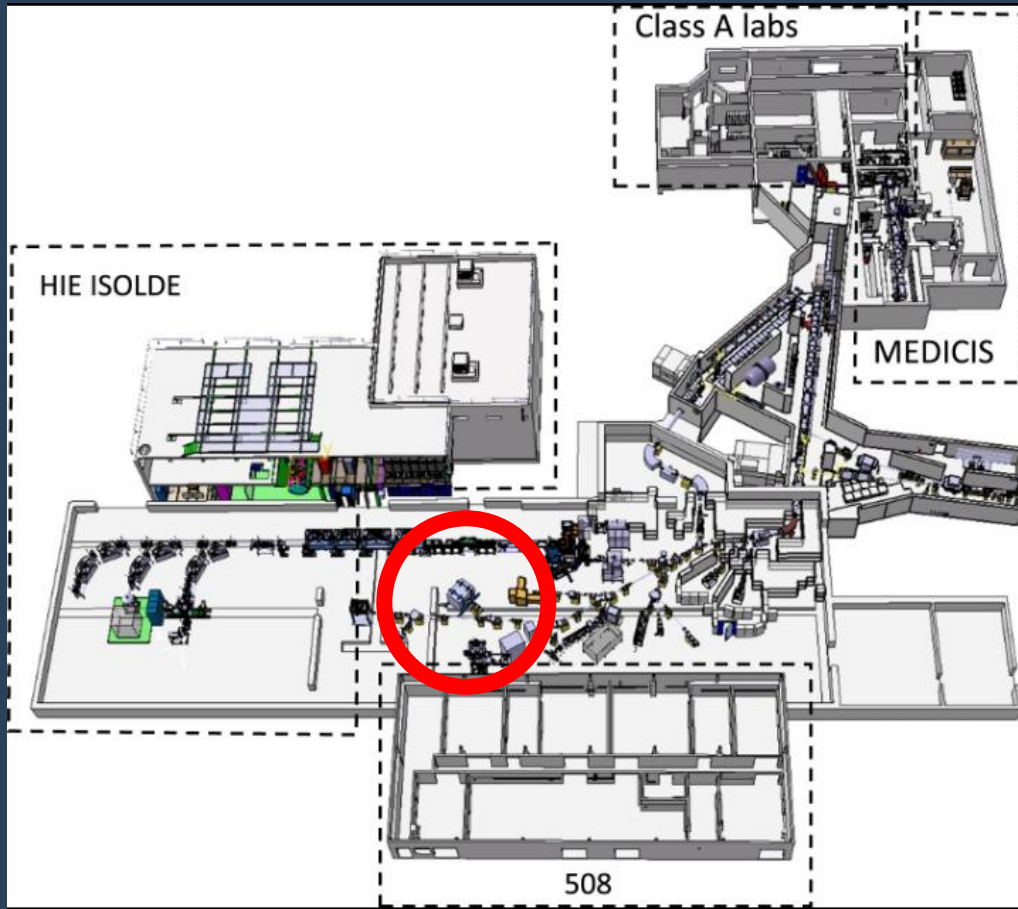


FIG. 3. γ -ray spectrum accumulated in first 50.0-sec interval following chemical separation of Ge from the ^{64}Zn targets. A spectrum taken 100 sec later is shown in Ref. 6.

TAS Measurement

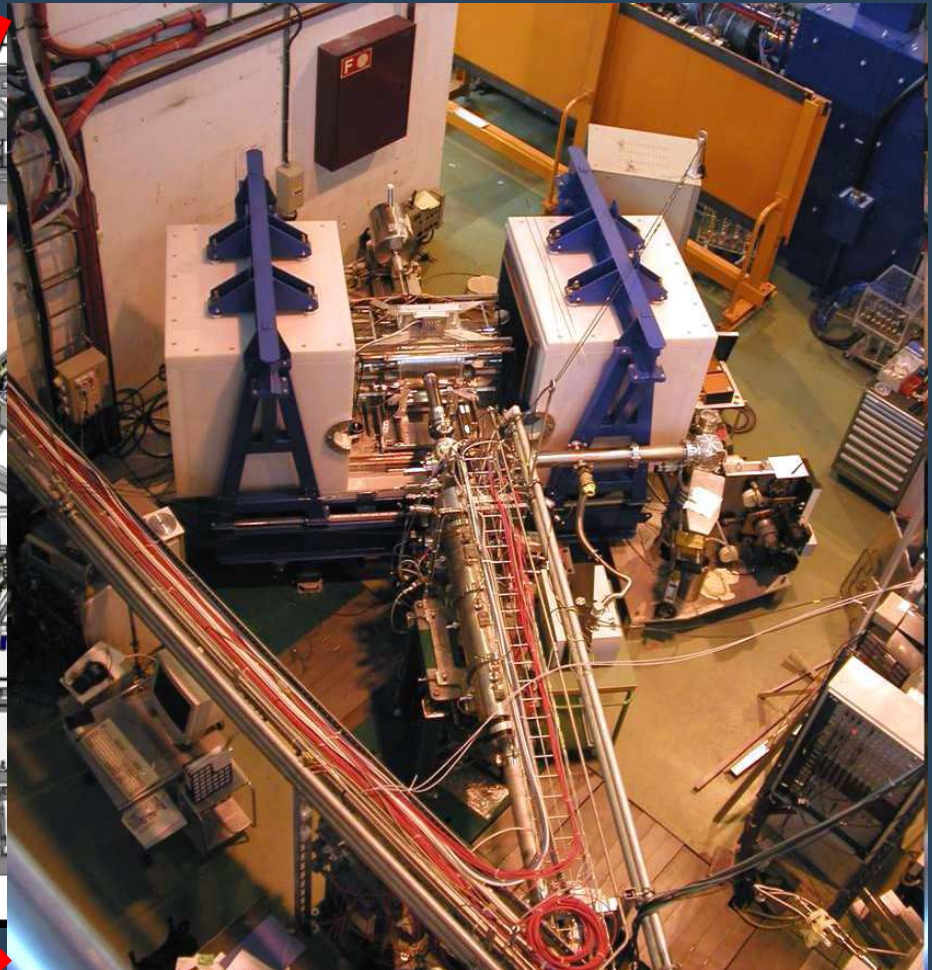
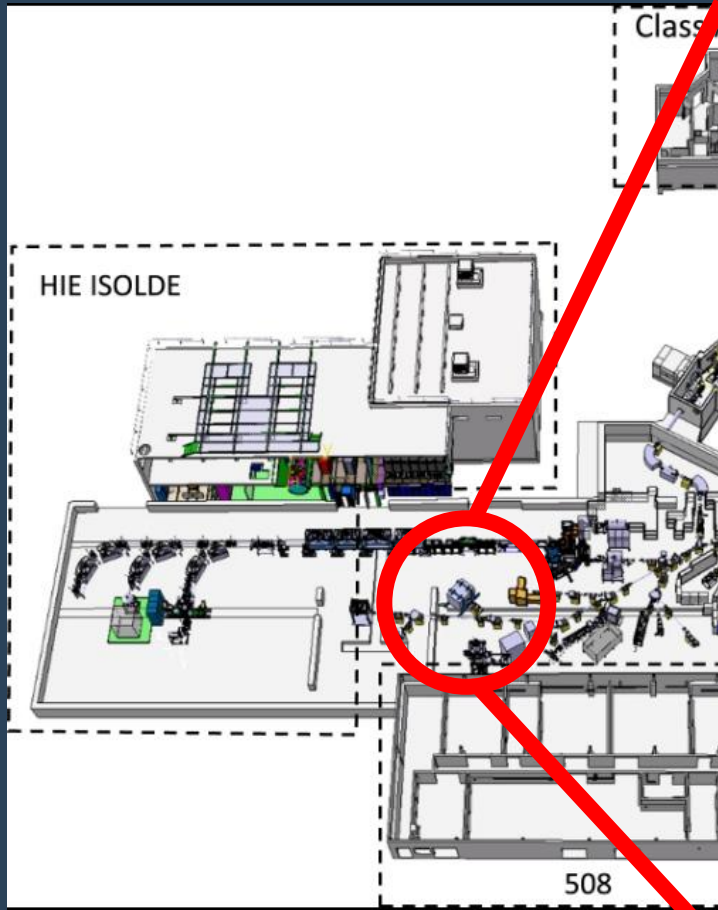




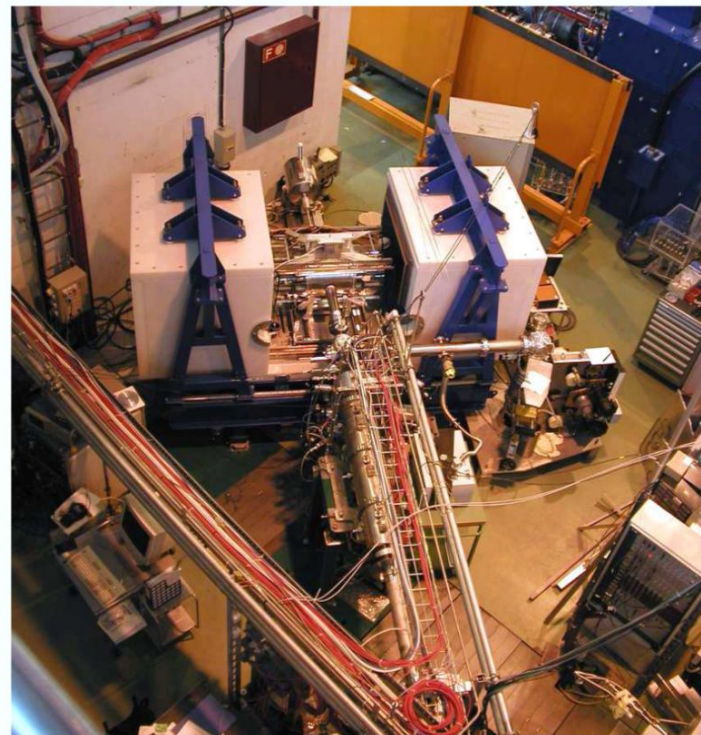
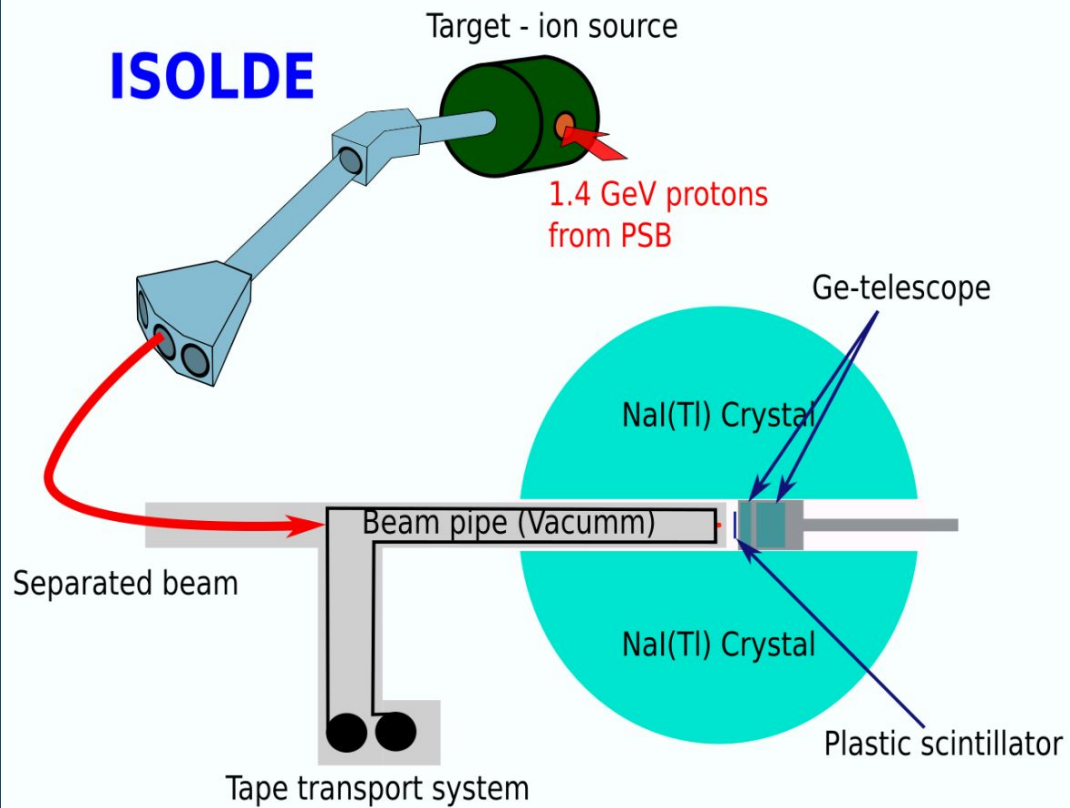


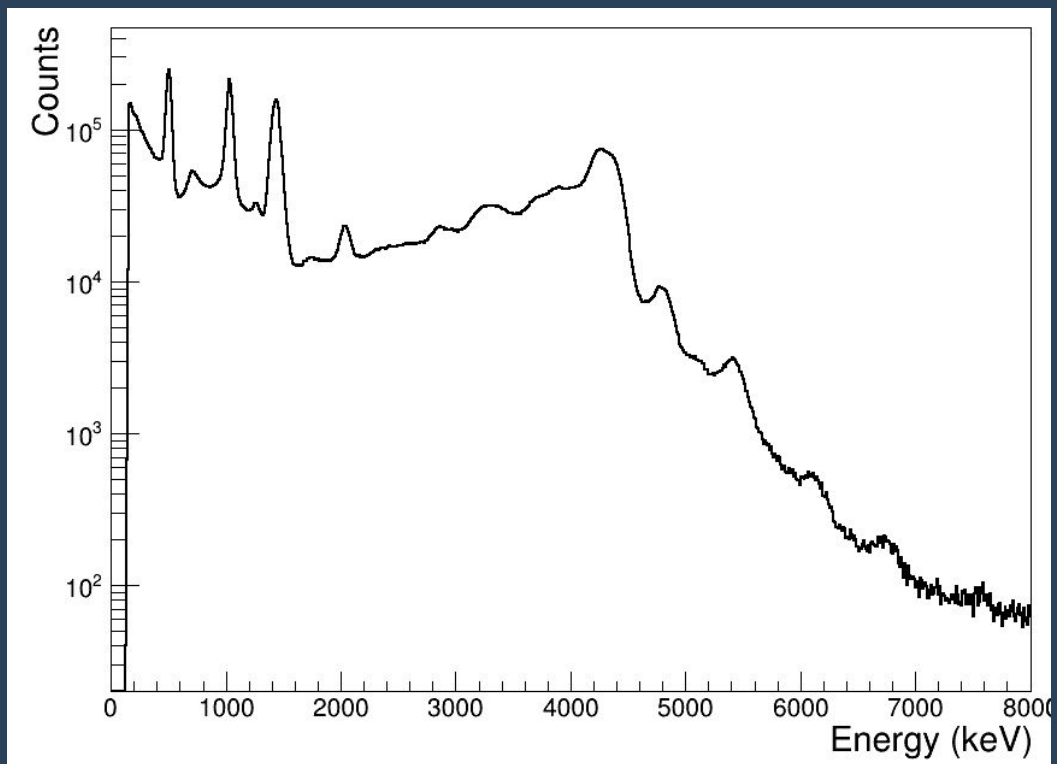
The ISOLDE facility is capable of producing highly pure beam of a single isotope

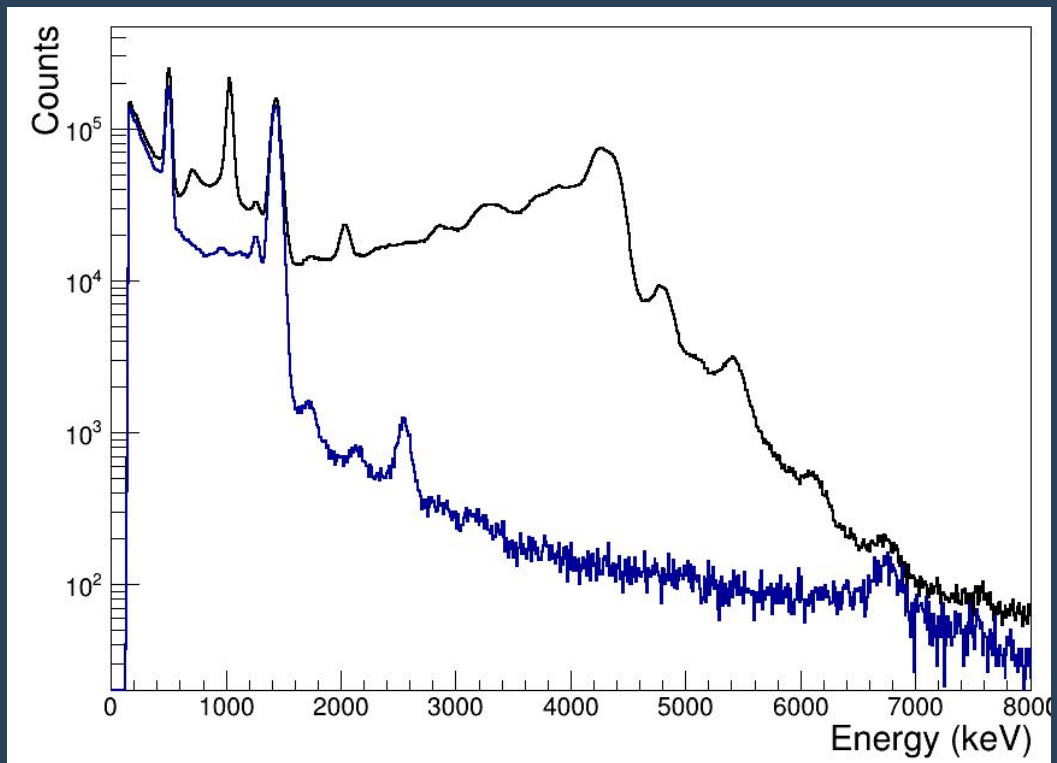
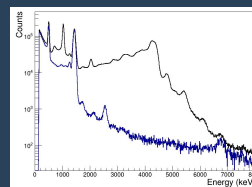
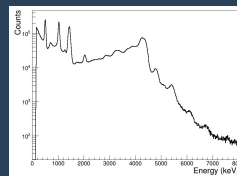
Our TAS setup, LUCRECIA, is set in one of these lines

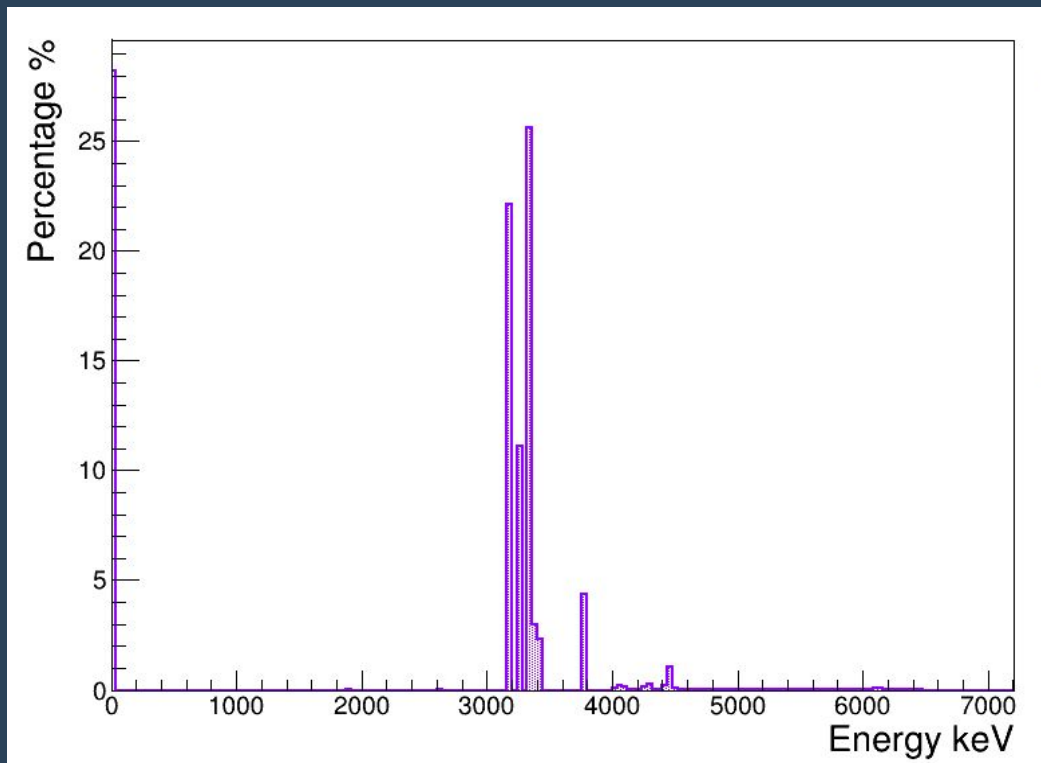
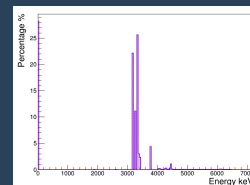
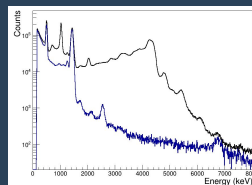
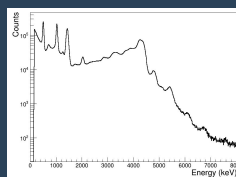


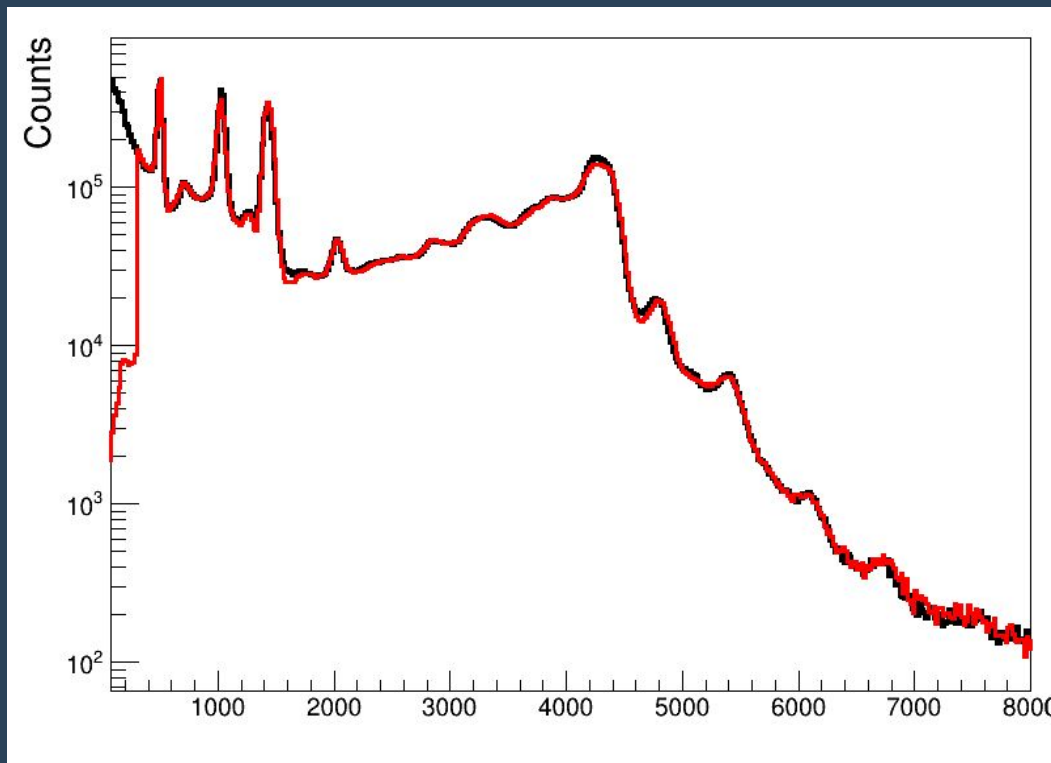
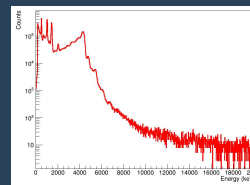
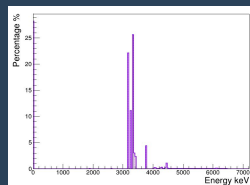
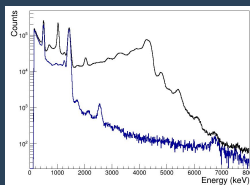
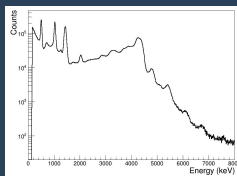
ISOLDE



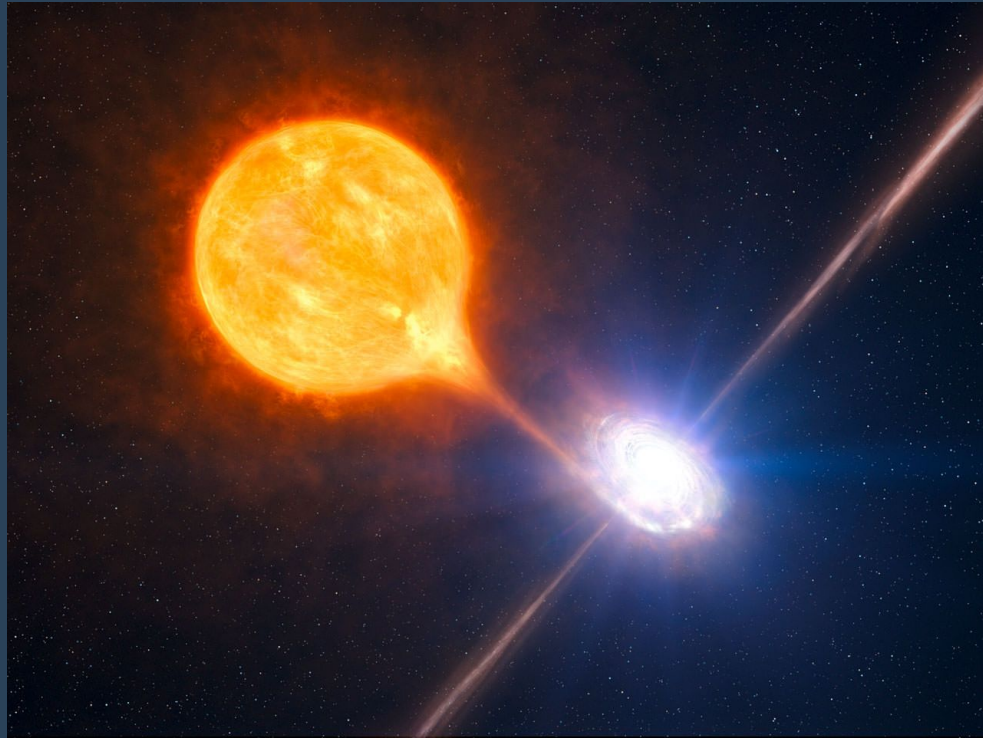


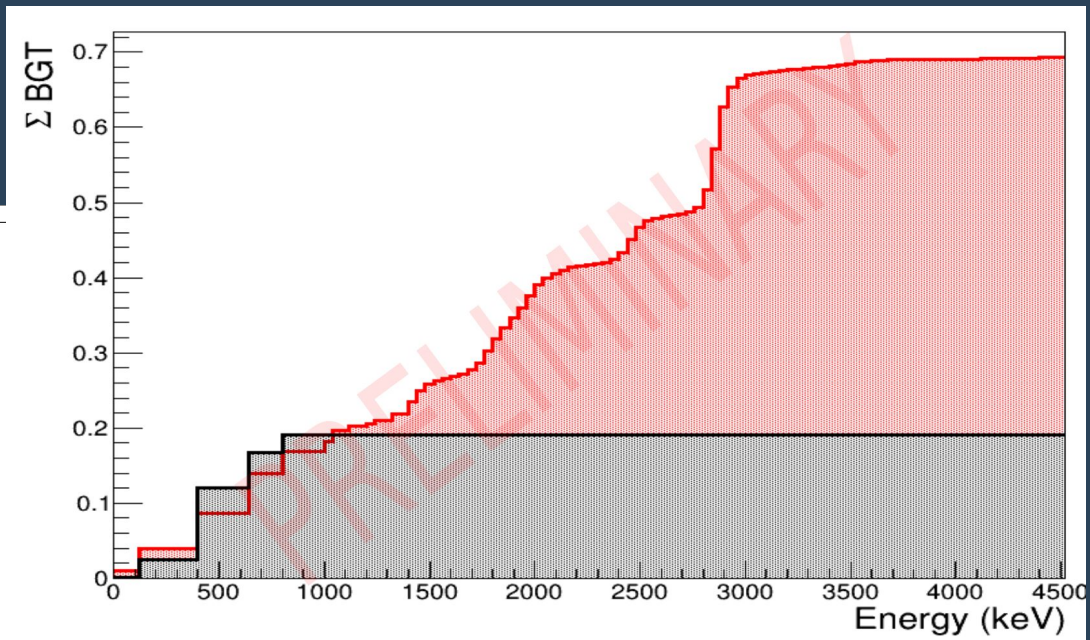
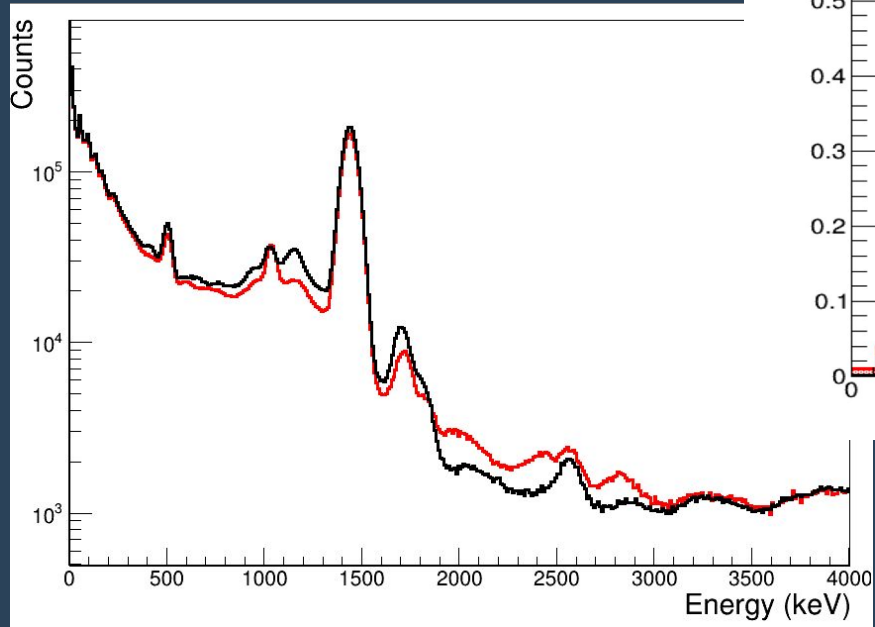


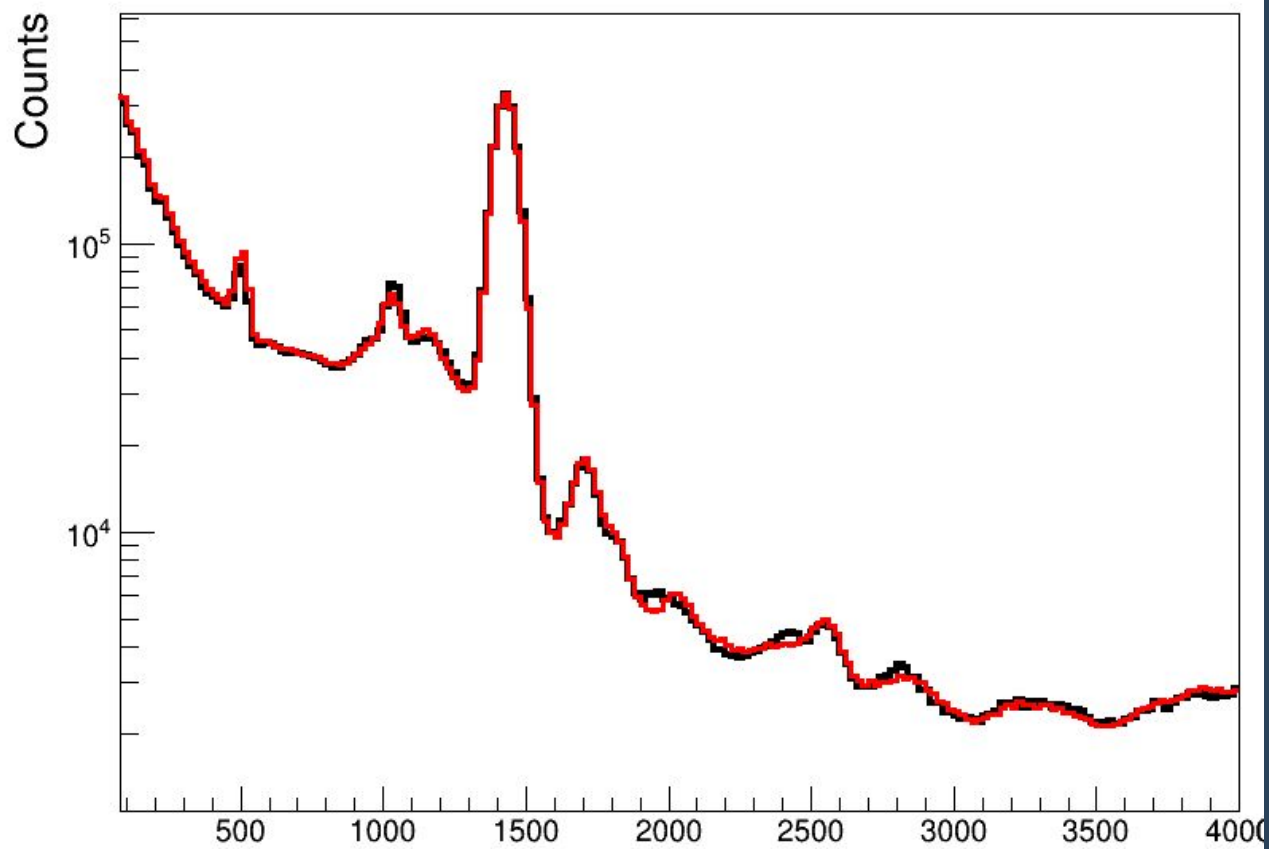




Experimental measurements







Shape study of the $N = Z$ nucleus ^{72}Kr via β decay

J. A. Briz,^{1,*} E. Nácher,^{1,2} M. J. G. Borge,^{1,3} A. Algara,^{2,4} B. Rubio,² Ph. Dessagne,^{5,6} A. Maira,¹ D. Cano-Ott,^{2,7} S. Courtin,^{5,6} D. Escrig,¹ L. M. Fraile,⁸ W. Gelletly,⁹ A. Jungclaus,¹ G. Le Scornet,³ F. Maréchal,^{5,6} Ch. Miehé,^{5,6} E. Poirier,^{5,6} A. Poves,¹⁰ P. Sarriguren,¹ J. L. Tañá,² and O. Tengblad¹

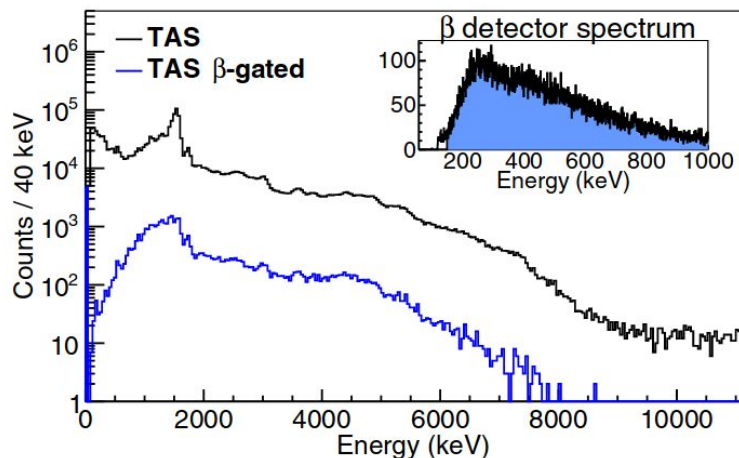


FIG. 3. (Color online) TAS spectra taken for ^{72}Kr decay during the first run of 75 min (black). The blue line shows the spectrum obtained when gating with a signal in the β detector using the coincidence energy window ($E > 150$ keV) shown in the top-right inset.

Deformation of the $N = Z$ Nucleus ^{76}Sr using β -Decay Studies

E. Nácher,^{*} A. Algara,[†] B. Rubio, J. L. Tañá, and D. Cano-Ott[‡]
Instituto de Física Corpuscular, CSIC-Universidad de Valencia, E-46071 Valencia, Spain

S. Courtin, Ph. Dessagne, F. Maréchal, Ch. Miehé, and E. Poirier
Institut de Recherches Subatomiques, INP-CNRS, F-67037 Strasbourg CEDEX 2, France

M. J. G. Borge, D. Escrig, A. Jungclaus,[§] P. Sarriguren, and O. Tengblad
Instituto de Estructura de la Materia, CSIC, E-28040 Madrid, Spain

W. Gelletly
Department of Physics, University of Surrey, Guildford, GU2 5XH, United Kingdom

L. M. Fraile^{||} and G. Le Scornet
ISOLDE, EP Division, CERN, CH-1211 Geneva, Switzerland
 (Received 4 March 2004; published 9 June 2004)

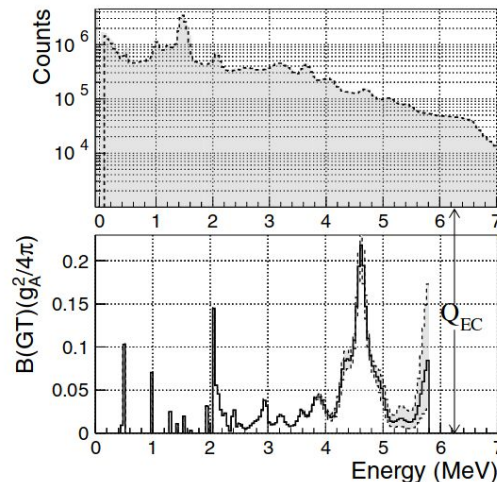
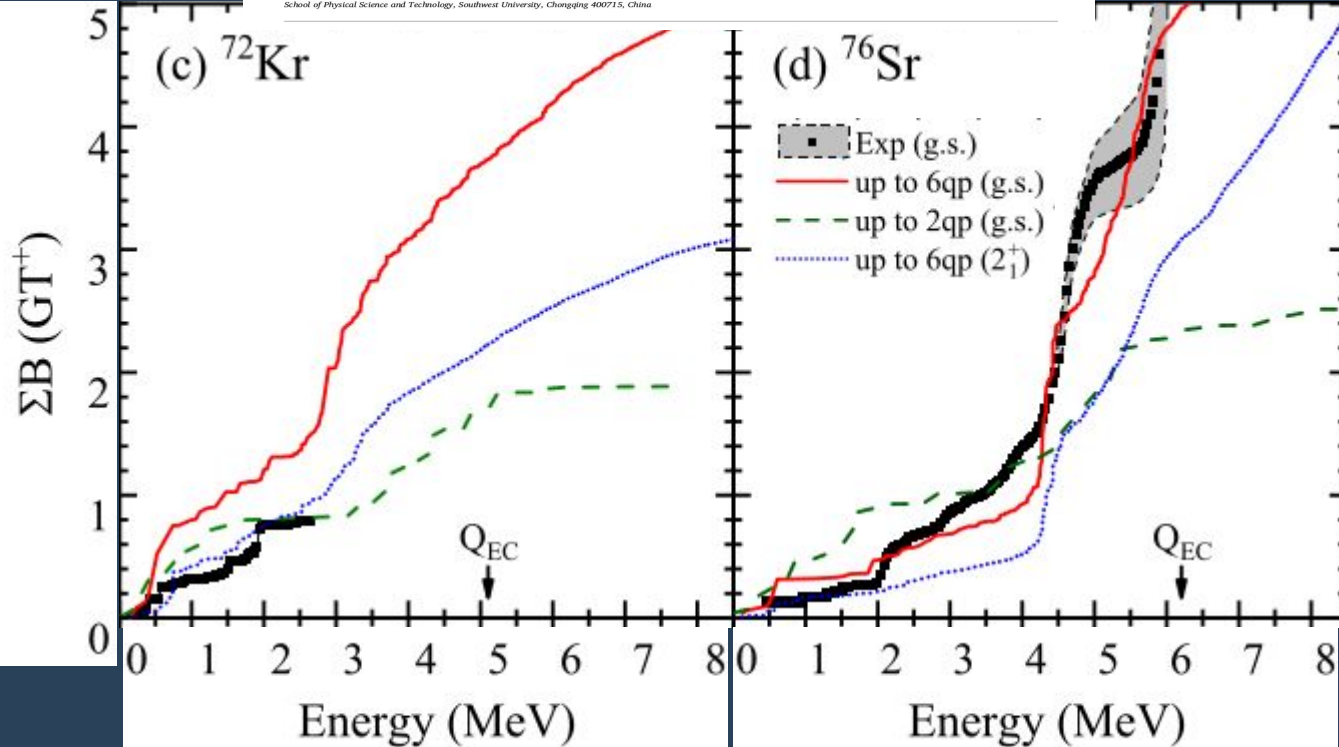


FIG. 1. Upper panel: Experimental total absorption spectrum of the β decay of ^{76}Sr overlaid with the recalculated spectrum after the analysis (see text). Lower panel: $B(\text{GT})$ distribution derived from the experimental data shown above. The shading represents the experimental uncertainty.



Letter

Stellar weak-interaction rates for rp -process waiting-point nuclei from projected shell model

Zi-Rui Chen, Long-Jun Wang ^{a,*}^a School of Physical Science and Technology, Southwest University, Chongqing 400715, ChinaShape study of the $N = Z$ nucleus ^{72}Kr via β decay

J. A. Briz,^{1,*} E. Nícher,^{1,2} M. J. G. Borge,^{1,3} A. Algora,^{2,4} B. Rubio,² Ph. Dessagne,^{5,6} A. Maira,¹ D. Cano-Ott,^{2,7}
 S. Courtin,^{5,8} D. Escrig,¹ L. M. Fraile,⁹ W. Gelleys,¹ A. Jungclaus,¹ G. Le Scornet,² F. Maréchal,^{5,6} Ch. Miehé,^{5,6} E. Poirier,^{5,6}
 A. Poves,¹⁰ P. Sarri-guren,¹ J. L. Tain,² and O. Tengblad¹

Deformation of the $N = Z$ Nucleus ^{76}Sr using β -Decay Studies

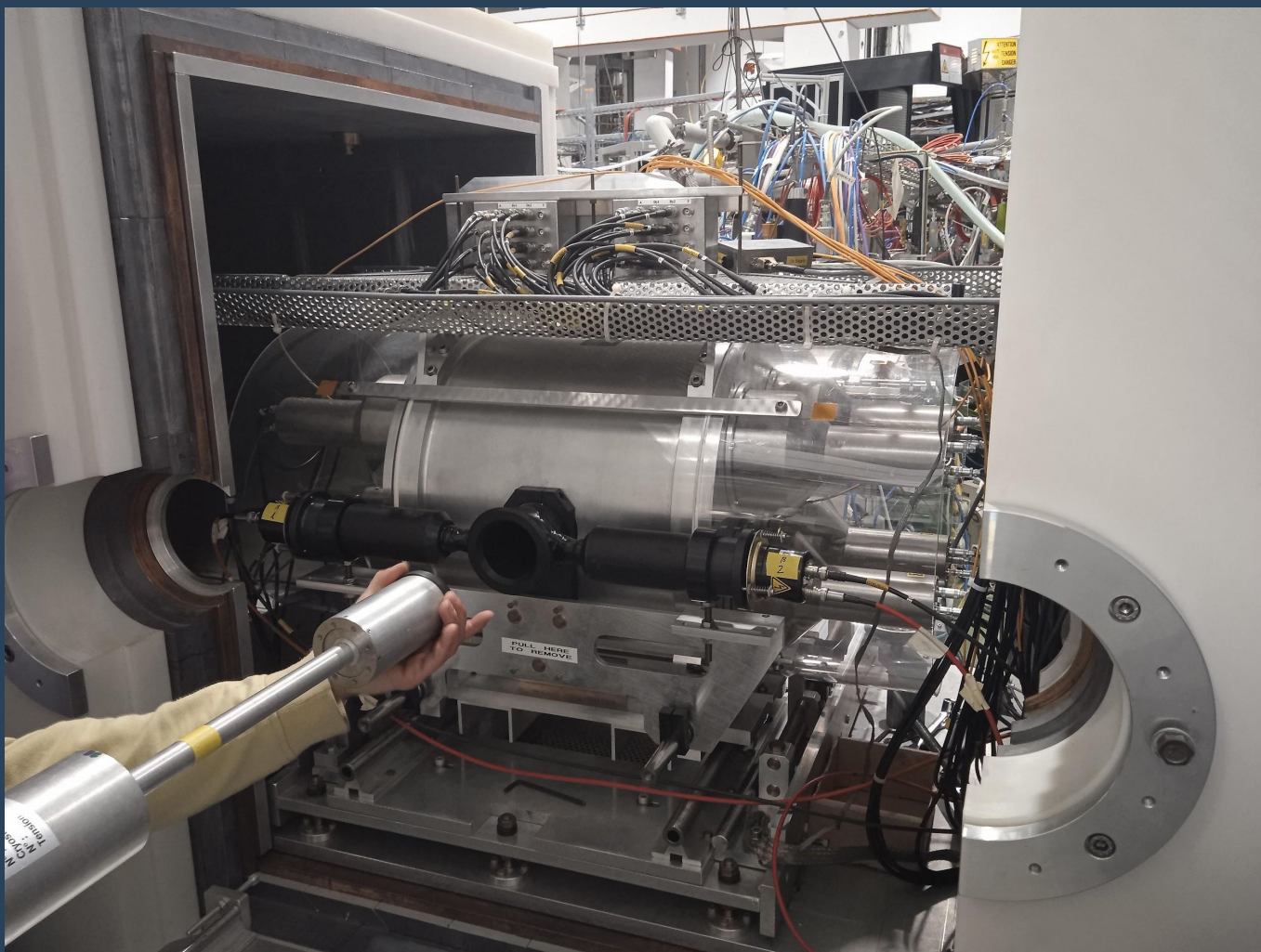
E. Nícher,¹ A. Algora,¹ B. Rubio,¹ J. L. Tain,² and D. Cano-Ott¹
¹ Instituto de Física Corpuscular e CMC-Universidad de Valencia, E-46107 Valencia, Spain
² S. Courtin, Ph. Dessagne, F. Maréchal, Ch. Miehé, and E. Poirier

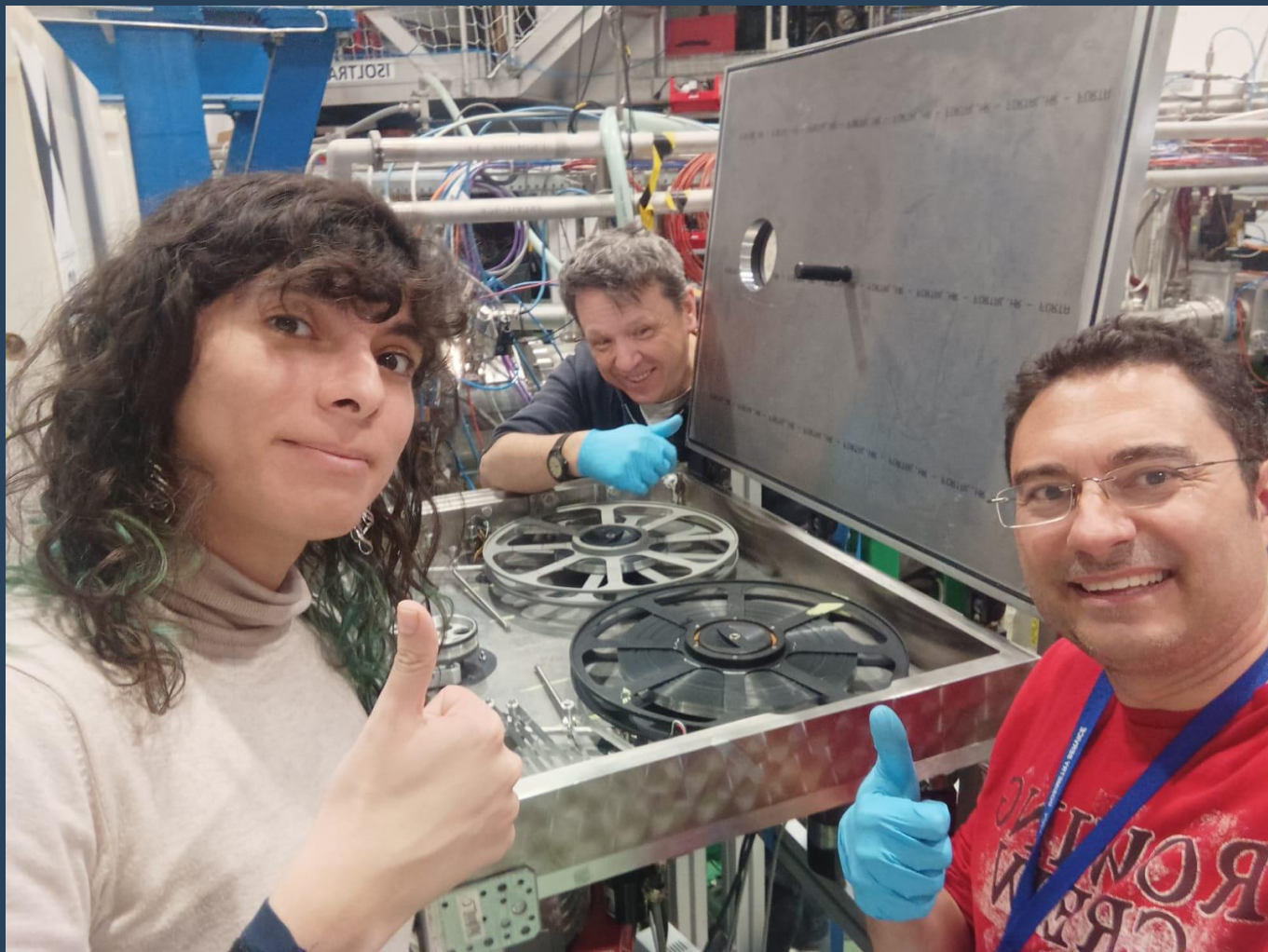
End?

Research is done by
people

My queer journey on academia



















Do It Yourself Hormone Replacement Therapy

In Dissonance with State-Sanctioned Constructions of Gender

Deconstructing expert power/knowledge

Not only did the participants question the ability of the medical system to decide whether they were in need for GAH or not, but some of those who were more experienced with DIY HRT also questioned the ability of the medical professionals to carry out HRT in a safe manner. One participant told:

Ironically, for example in Hungary, the official care basically makes people overdose testosterone blockers - which is one of the true ways to get side effects. So yeah, one of my statements would be that, depending on country and depending on doctor, because I've also heard stories like this from Germany, DIY is not necessarily more dangerous than doing it officially.



LEGISLACIÓN CONSOLIDADA

Ley 8/2017, de 7 de abril, integral del reconocimiento del derecho a la identidad y a la expresión de género en la Comunitat Valenciana.

Comunitat Valenciana
«DOCV» núm. 8019, de 11 de abril de 2017
«BOE» núm. 112, de 11 de mayo de 2017
Referencia: BOE-A-2017-5118

LEY 21120 | RECONOCE Y DA PROTECCIÓN AL DERECHO A LA IDENTIDAD DE GÉNERO

MINISTERIO DE JUSTICIA Y DERECHOS HUMANOS

Promulgación: 28-NOV-2018

Publicación: 10-DIC-2018

Versión: Última Versión - 28-DIC-2022

Última modificación: 28-DIC-2022 - Ley 21515

Materias: Identidad de Género, Derecho Identidad de Género, Género

Resumen: Esta ley reconoce y garantiza el Derecho a la Identidad de Género, entendiendo por tal, como la facultad de toda persona cuya identidad de género no coincida con su sexo y nombre registral, de solicitar su rectificación. Asimismo, define la Identidad de Género como la convicción personal e interna de ser hombre o mujer, tal como la persona se percibe a sí misma, la cual puede corresponder o no con el sexo y nombre verificados en el acta de inscripción del nacimiento.

En consecuencia, esta ley tiene por objeto regular los procedimientos para acceder a la rectificación de la partida de nacimiento de una persona en lo relativo a su sexo y nombre, ante el órgano administrativo o judicial respectivo, cuando dicha partida no se corresponda o no sea congruente con su identidad de género y sus efectos.

Este derecho también puede ser ejercido por menores de dieciocho y mayores de catorce años a través de sus representantes legales, siendo competente el tribunal de familia del domicilio del solicitante.

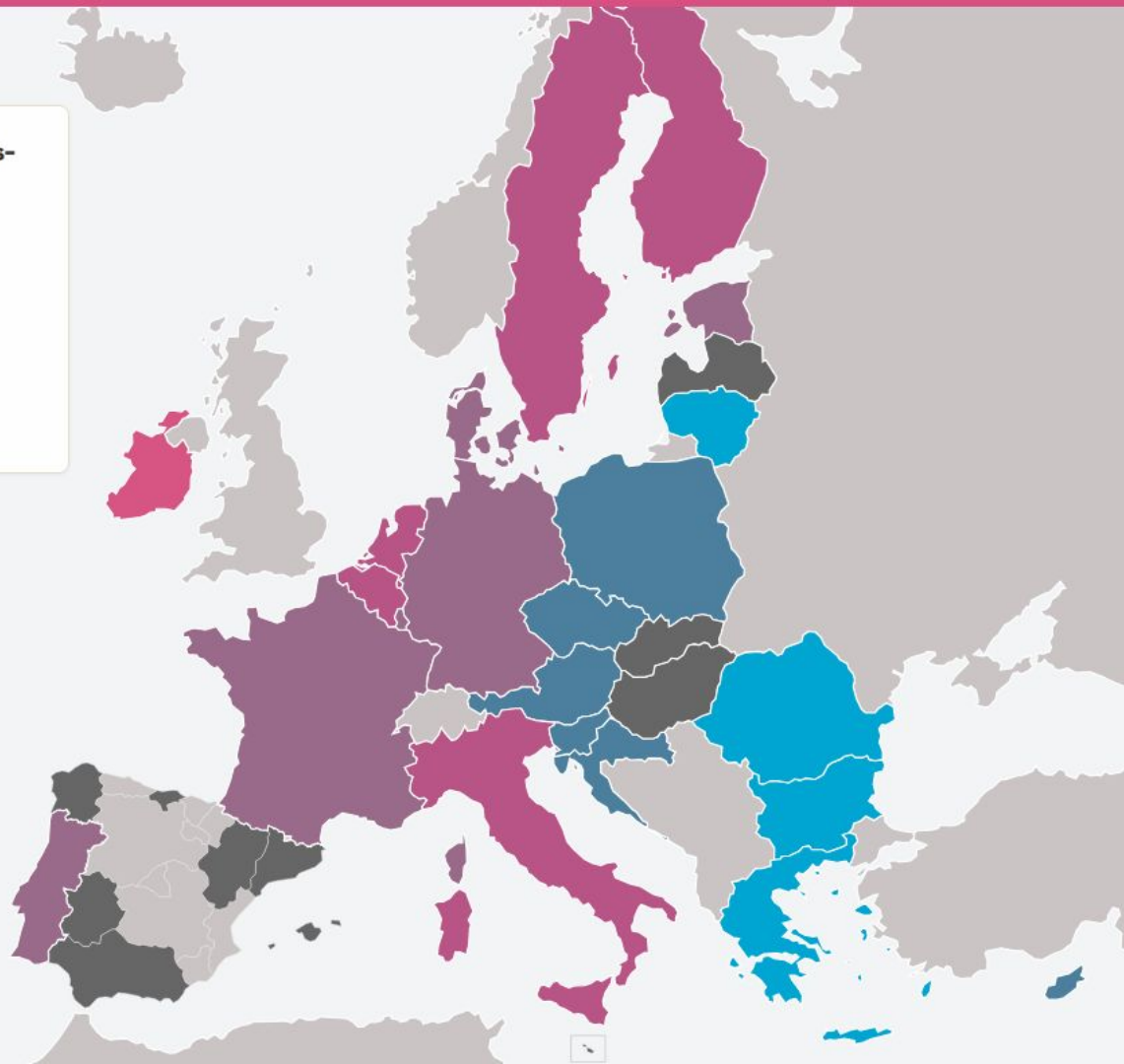
Respecto de la entrada en vigencia de la ley, se contempla un plazo de ciento veinte días después de la última publicación en el Diario Oficial de los reglamentos contemplados en el artículo 26 de la ley.

<< ver menos



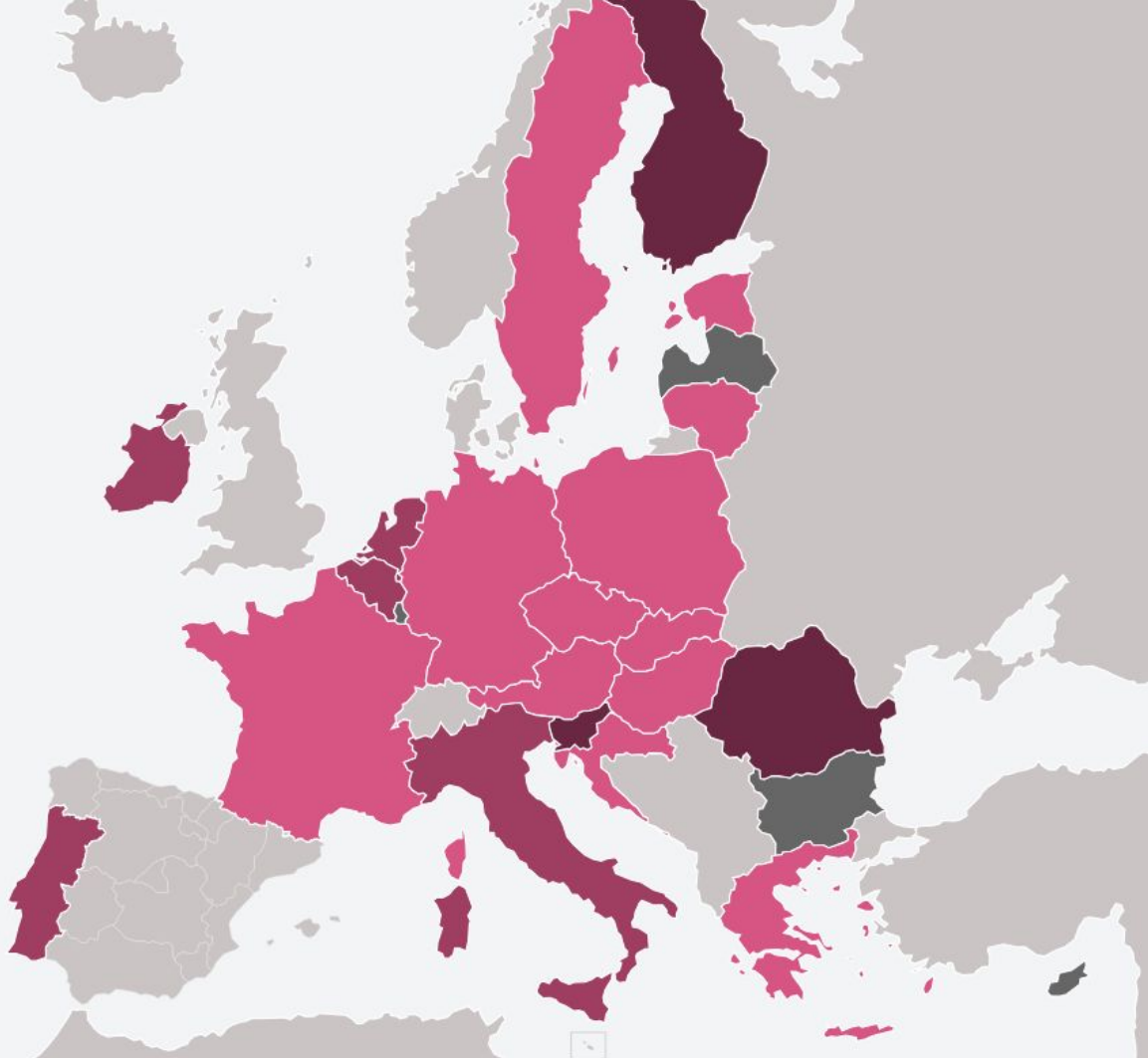
Waiting times for first appointment with a trans-specific healthcare professional

- 1-3 months
- 3-6 months
- 6-12 months
- 1-3 years
- More than 3 years
- Not enough information



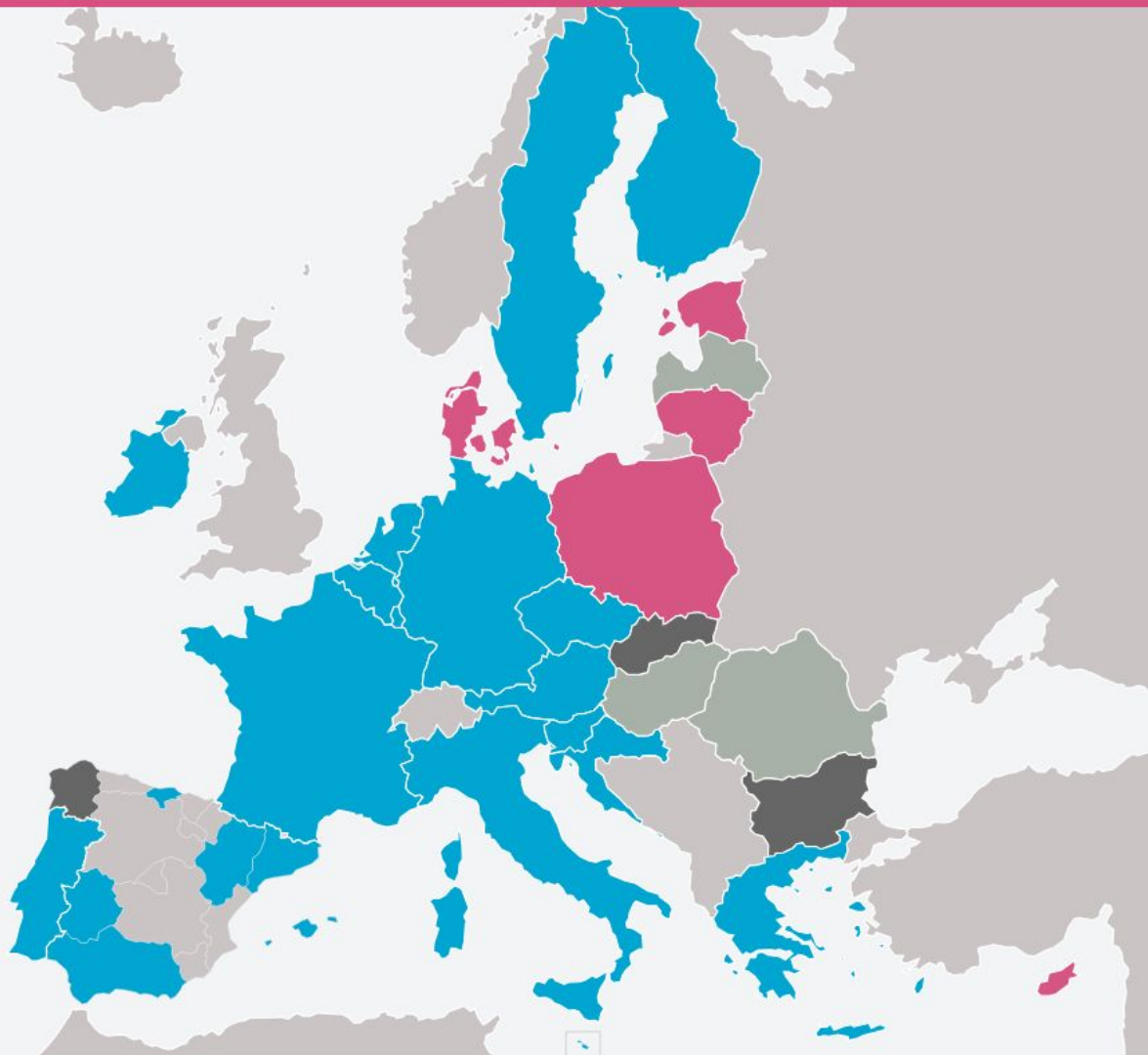
Requirement of psychiatric diagnosis

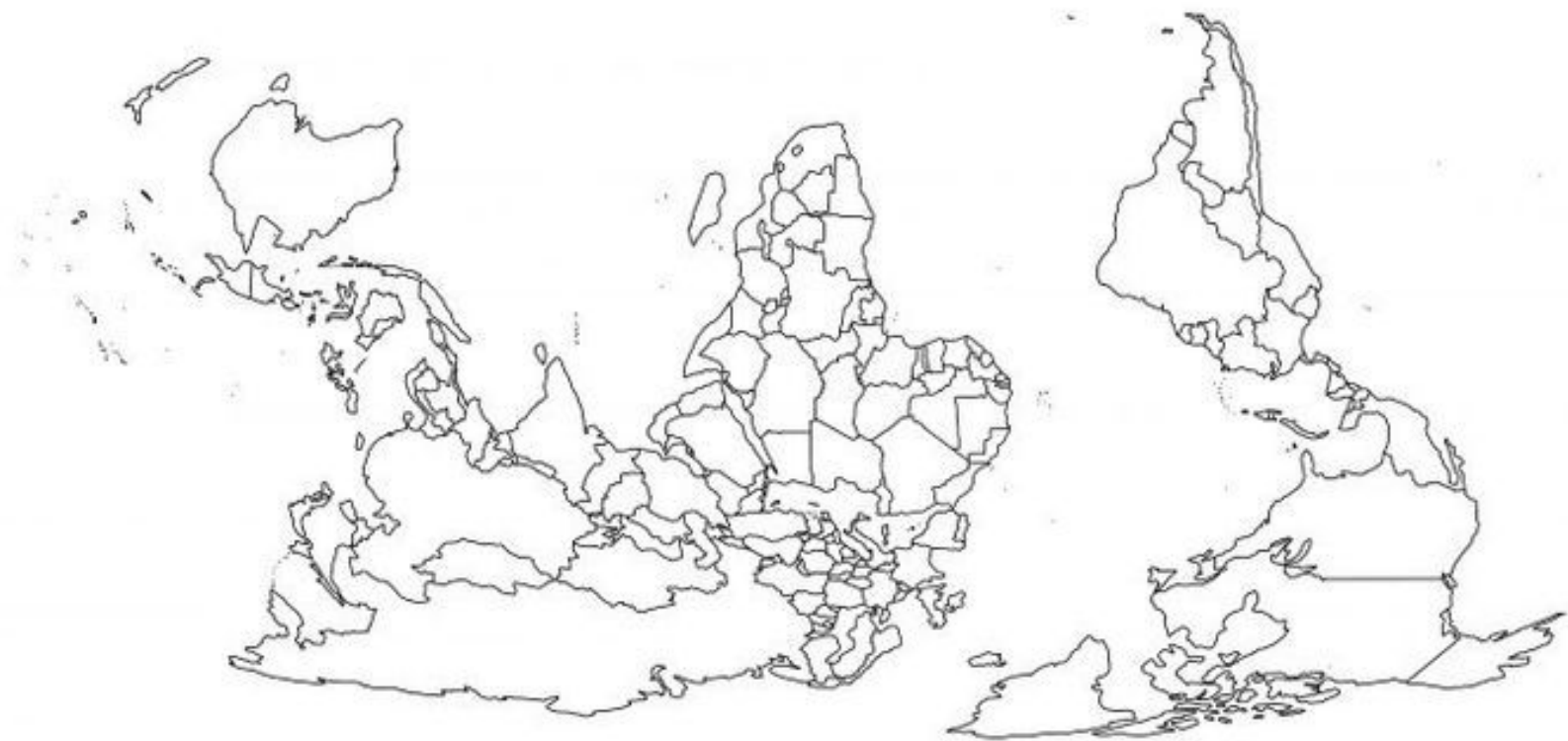
- Transsexualism
- Gender dysphoria
- Transsexualism or gender dysphoria
- Not enough information
- No diagnosis required



HRT (Oestrogen)

- Public health funding of at least 70%
- No public health funding or less than 70%
- Not enough information
- Not applicable

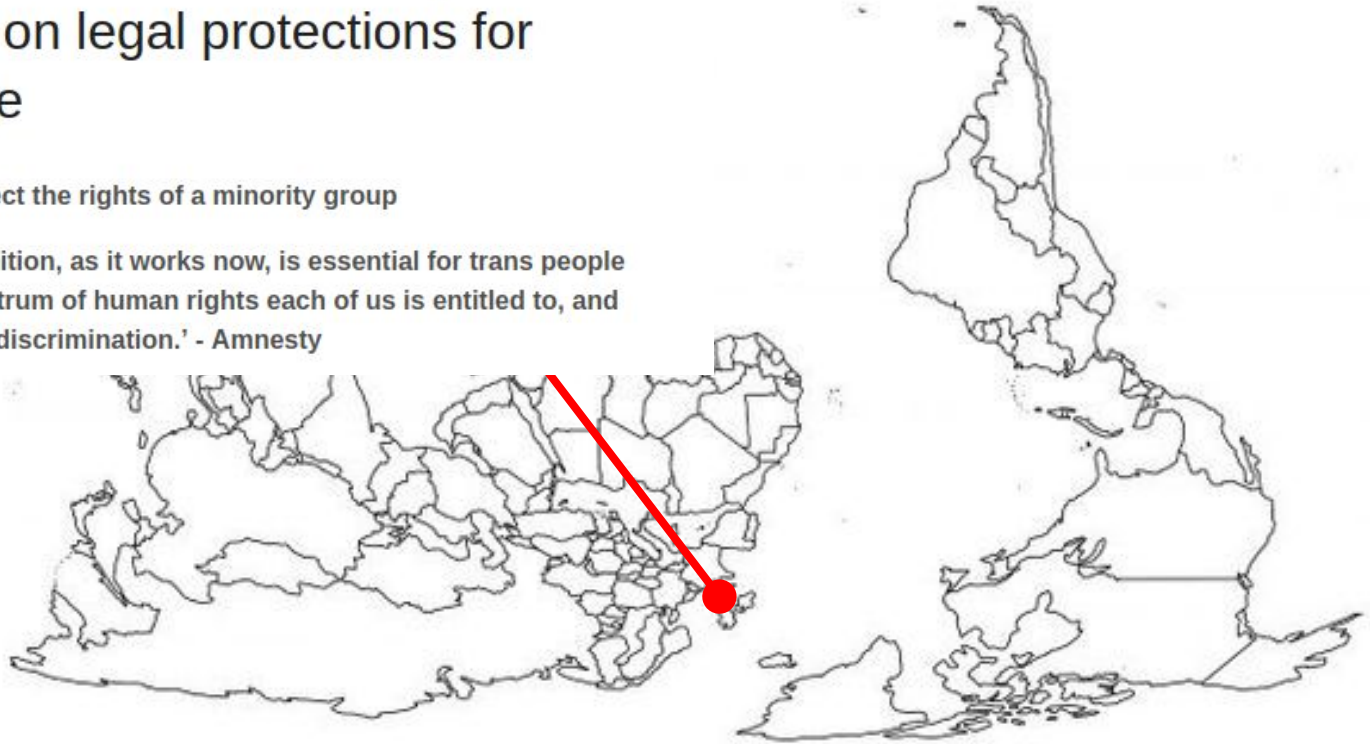




UK: Amnesty intervenes in Supreme Court case on legal protections for trans people

The Court must protect the rights of a minority group

‘Legal gender recognition, as it works now, is essential for trans people to enjoy the full spectrum of human rights each of us is entitled to, and live free from fear of discrimination.’ - Amnesty



UK: Amnesty intervenes in Supreme Court case on legal protections for trans people

The Court must protect the rights of a minority group

'Legal gender recognition, as it works now, is essential for trans people to enjoy the full spectrum of human rights each of us is entitled to. We must live free from fear of discrimination.' - Amnesty

HEALTH

England is limiting gender transitions for youths. US legislators are watching



BREAKING

6 NEWS

QLD SUSPENDS USE OF PUBERTY BLOCKERS

@6NewsAU

 [.com/@6newsau](https://www.youtube.com/@6newsau)

NEWS (WORLD)

Thailand makes hormone therapy free for trans people just after legalizing marriage equality

The move follows enactment of the country's new marriage equality law.





ELSEVIER

Social Science & Medicine

Volume 344, March 2024, 116658



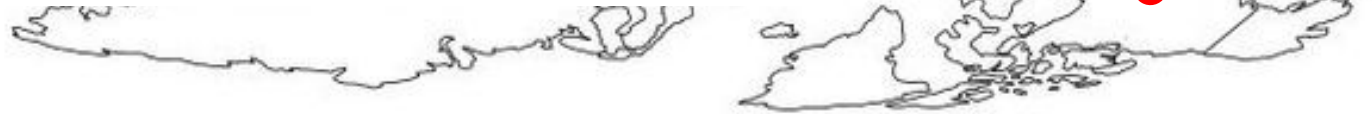
Care in transition: Global norms, transnational adaptation, and family-centered gender-affirming care in China

Xiaogao Zhou ✉



Sec. 3. Ending Reliance on Junk Science. (a) The blatant harm done to children by chemical and surgical mutilation cloaks itself in medical necessity, spurred by guidance from the World Professional Association for Transgender Health (WPATH), which lacks scientific integrity. In light of the scientific concerns with the WPATH guidance:

(i) agencies shall rescind or amend all policies that rely on WPATH guidance, including WPATH's "Standards of Care Version 8"; and



2025 anti-trans bills tracker

In 2025, anti-trans bills continue to be introduced across the country. We track legislation that seeks to block trans people from receiving basic healthcare, education, legal recognition, and the right to publicly exist.

370 bills **43 states**

2 passed **368** active **0** failed

☐ Show 2024



HUMAN
RIGHTS
WATCH



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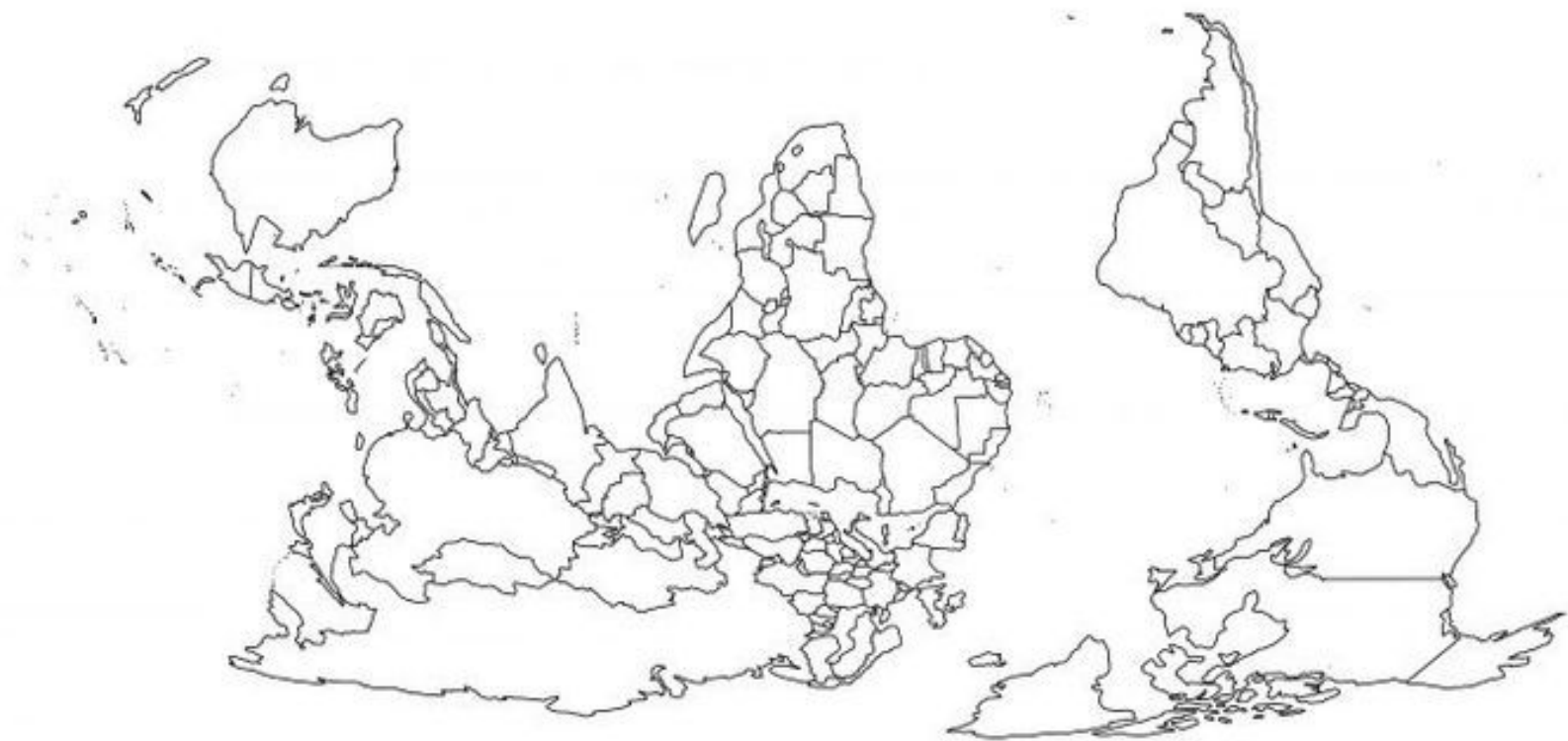


March 19, 2019

“A Really High Hurdle”

Japan’s Abusive Transgender Legal Recognition Process

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Thanks for your attention

