---------- **Forwarded message** ---------
From: **Measurement** <em@editorialmanager.com>
Date: Mon, Mar 31, 2025 at 4:03 PM
Subject: Your Submission - Major Revision Required MEAS-D-24-11112
To: Annamaria Pau <annamaria.pau@uniroma1.it>

Ms. Ref. No.: **MEAS-D-24-11112**
Title: 3D tomographic reconstruction of light emission density of plasma in the PROTO-SPHERA experiment
Measurement

Dear Dr. Annamaria Pau,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Your cover letter for the revised version should describe how you have incorporated the reviewers' comments, not just stating that you have made changes. In addition, please ensure submit a version that highlights the changes you have made (marked version). The most simple way to do this is to use the "redline" comparison feature in Word to prepare a version that shows all the changes.

Your revised paper is due on the **Apr 21, 2025**. Manuscripts not resubmitted by **Apr 21, 2025** will be withdrawn automatically.

To submit a revision, please go to https://www.editorialmanager.com/meas/ and login as an Author.

Your username is: annamaria.pau@uniroma1.it
If you need to retrieve password details, please go to: click here to reset your password

NOTE: Upon submitting your revised manuscript, please upload the source files for your article. For additional details regarding acceptable file formats, please refer to the Guide for Authors at: http://www.elsevier.com/journals/measurement/0263-2241/guide-for-authors

When submitting your revised paper, we ask that you include the following items:

Manuscript and Figure Source Files (mandatory)

We cannot accommodate PDF manuscript files for production purposes. We also ask that when submitting your revision you follow the journal formatting guidelines. Figures and tables may be embedded within the source file for the

submission as long as they are of sufficient resolution for Production. For any figure that cannot be embedded within the source file (such as *.PSD Photoshop files), the original figure needs to be uploaded separately. Refer to the Guide for Authors for additional information.
http://www.elsevier.com/journals/measurement/0263-2241/guide-for-authors

Highlights (mandatory)

Highlights consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). See the following website for more information
http://www.elsevier.com/highlights

Graphical Abstract (optional)

Graphical Abstracts should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership online. Refer to the following website for more information:
http://www.elsevier.com/graphicalabstracts

On your Main Menu page is a folder entitled "Submissions Needing Revision". You will find your submission record there.

For guidelines on how to submit your revised manuscript please go the following address: http://help.elsevier.com/app/answers/detail/p/7923/a_id/91

Measurement features the Interactive Plot Viewer, see:
http://www.elsevier.com/interactiveplots. Interactive Plots provide easy access to the data behind plots. To include one with your article, please prepare a .csv file with your plot data and test it online at
http://authortools.elsevier.com/interactiveplots/verification before submission as supplementary material.

PLEASE NOTE: Measurement would like to enrich online articles by displaying interactive figures that help the reader to visualize and explore your research results. For this purpose, we would like to invite you to upload figures in the MATLAB .FIG file format as supplementary material to our online submission system. Elsevier will generate interactive figures from these files and include them with the online article on SciVerse ScienceDirect. If you wish, you can submit .FIG files along with your revised submission.

Research Elements (optional)
This journal encourages you to share research objects – including your raw data, methods, protocols, software, hardware and more – which support your original research article in a Research Elements journal. Research Elements are open access, multidisciplinary, peer-reviewed journals which make the objects associated with your research more discoverable, trustworthy and promote replicability and

reproducibility. As open access journals, there may be an Article Publishing Charge if your paper is accepted for publication. Find out more about the Research Elements journals at https://www.elsevier.com/authors/tools-and-resources/research-elements-journals?dgcid=ec_em_research_elements_email.

Yours sincerely,

Amir H. Alavi, PhD
Editor
Measurement

**Reviewers' comments:**

**Reviewer #1: Comments on "3D tomographic reconstruction of light emission density of plasma in the PROTO-SPHERA experiment"**

This manuscript describes the direct back projection method based on the Fourier slice theorem and extends the theorem to three dimensions. The authors applied this method and performed limited view direct three-dimensional tomography on a magnetic confinement device and presented both time-resolved and spatially resolved plasma emission profile. The work here is related to sparse-view meter-sized plasma tomography and reactor plasma tomography, and it is interesting to see time-resolved three-dimensional reconstruction of reactor plasmas. However, serious flaws in the chosen method prevents me from recommending publication or revision at this stage.

First and foremost, the validity of the Fourier slice theorem in higher dimensions is well known, and the proof can be found in computed tomography textbooks [1] (see Chapter 8), it is not a novel or original method, the method is rarely used due to artefacts in back projections (visible in all reconstruction figures 15-17). The authors spend much of the introduction on the history of medical tomography and provided no reference to related fusion plasma tomography works, just to list a few [2-6].

Secondly, the acquisition geometry is quite confusing, as the method requires parallel beams, but the actual camera acquisition is of cone beam geometry, and even more confusing is the placement of the cameras, which are all 180 degrees opposite to each other, providing essentially three views [1]. Given such limited data and the method in the manuscript, it is highly unlikely that the reconstructed profile is accurate.

Although the subject is interesting, the specific method used in this manuscript is not state of the art and should not be used. I recommend that the authors read related reactor tomography work and use another reconstruction method on the acquired images and resubmit the manuscript.

References:

[1] Buzug T 2008 Computed Tomography (Berlin, Heidelberg: Springer)
[2] Granetz R S and Smeulders P 1988 X-ray tomography on JET Nucl. Fusion 28 457
[3] Mlynar J, Craciunescu T, Ferreira D R, Carvalho P, Ficker O, Grover O, Imrisek M, Svoboda J, and JET contributors 2019 Current Research into Applications of Tomography for Fusion Diagnostics J. Fusion Energy 38 458-66
[4] Anon 2017 Deep learning for plasma tomography using the bolometer system at JET Fusion Eng. Des. 114 18-25
[5] Anon 2012 Modern numerical methods for plasma tomography optimisation Nucl. Instrum. Methods Phys. Res. Sect. Accel. Spectrometers Detect. Assoc. Equip. 686 156-61
[6] Jardin A, Bielecki J, Mazon D, Peysson Y, Król K, Dworak D and Scholz M 2021 Implementing an X-ray tomography method for fusion devices Eur. Phys. J. Plus 136 706

**Reviewer #2:** The manuscript introduces a method for reconstructing 3D density functions based on a corollary of the 3D Fourier slice theorem, applied to visualizing the emission density distribution of magnetically confined plasma. While the study is promising, there are some areas that require improvement:
- The abstract would benefit from additional background information and a clearer articulation of the manuscript's contributions.
- Certain sections (e.g., around lines 16-17) are missing citations, and the discussion of related work should be organized into a dedicated section for better clarity.
- A detailed pipeline describing the methodology would help improve the transparency and comprehensibility of the process.
- Experimental comparisons with existing methods are necessary to validate the effectiveness of the proposed approach.