COB-2025-XXXX (XXXX is the identification number of the final paper) INSTRUCTIONS FOR FORMATTING THE PROCEEDINGS PAPERS OF THE 28th COBEM

First Author's Name
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Institution and address for first and second authors - if the same
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Abstract. The abstract should describe the objectives, context, and significance of the research, methods, results, and main conclusions of the paper in about 300 words. It should not include formulas or references to a bibliography. It must be written in only one paragraph.

Keywords: keyword 1, keyword 2, keyword 3, ... (up to 5 keywords separated by commas)

1. INTRODUCTION

These instructions are intended to serve as a guide for the formatting of papers to be published in the Proceedings. The proceedings of the 28th COBEM will be published in Adobe™ PDF format.

Papers MUST be formatted according to these instructions. This file can be used as a template for LaTeX. LaTeX is available as free software. It can also be used as a formatting guide for users of other word processing programs.

Submissions are limited to a minimum of 6 pages and a maximum of 10 pages, including tables and figures.

2. TEXT FORMAT

Manuscripts should be in English, typewritten on A4 pages in Times New Roman font, size 10, except for the title, author affiliation, abstract, and keywords, for which special formatting instructions are given above. Use single space between lines throughout the text.

The block of text containing the title, author names and affiliations, abstract, and keywords must be indented 0.1 cm from the left margin and marked by a 2 1/4 pt wide black line on the far left.

Pages must have a top margin of 3 cm and all other margins (left, right, and bottom) must have 2 cm. The text must be justified. The first line of each paragraph must be indented by 0.5 cm. Sufficient information must be given directly in the text or by reference to available published work. Footnotes should be avoided.

PAGES **SHOULD NOT** BE NUMBERED.

All symbols and notations must be defined in the text. Physical quantities must be expressed in the SI (metric) units. Mathematical symbols that appear in the text must be written in italics. Units should not be italicized (e.g., kg, m, MJ, kW/m^2, . . ., instead of kg, m, MJ, kW/m^2, . . .).

Bibliographic references should be cited in the text by giving the last name of the author(s) and the year of publication, according to the following examples: "Recent work (Choma and Ugaya, 2017). . ." or "Recently, Choma and Ugaya (2017). . .". In the case of three or more authors, the form "(Porto-Hernandez *et al.*, 2023)" should be used. Two or more references having the same authors and publication year must be distinguished by appending "a", "b", etc., to the year of publication. For example: "In the works of Pitz *et al.* (2017a) and Pitz *et al.* (2017b), . . .".

Acceptable references include journal articles (Sestito *et al.*, 2022) (Miyawaki *et al.*, 2021), articles published in conference proceedings (Pitz *et al.*, 2017a) (Santos *et al.*, 2013) (Nostrani *et al.*, 2019), conference proceedings (Carvalho *et al.*, 2018), books (Mendonça and Fancello, 2019) , Master's Theses (Souza, 2022) and Doctoral Dissertations or Doctoral Theses (Santos, 2020), patents (Mendes *et al.*, 2024) (Vargas *et al.*, 2021), reports, when publicly available, (EPE, 2022), websites and specific pages in websites (MLA, 2020), and submitted articles (if the journal is indicated).

References should be listed at the end of the manuscript according to instructions provided in Section 4.

2.1 Section titles and subtitles

Section headings and subheadings must be left-aligned and bolded in Times New Roman, size 10. They must be numbered with Arabic numerals separated by periods. No more than 3 subheadings (*section*, *subsection*, and *subsubsection*) should be used.

There must be a single line above and below each section title/subtitle.

2.2 Mathematical equations

Mathematical equations must be indented 0.5 cm from the left margin. They must be written in Times New Roman (or Cambria Math), italics, font size 10 pt. Arabic numerals must be used as equation numbers, enclosed in parentheses and right justified, as shown in the example below. Equations should be designated as either "Eq. (1)" in the middle of a sentence or "Equation (1)" at the beginning of a sentence. Matrix and vector quantities can be indicated either by square and curly brackets, as in Eq. (1), or by boldface, as in Eq. (2). A blank line must be inserted above and below each equation. The symbols used in the equations must be defined immediately before or after their first occurrence. "The equation of the dynamical system is written in one of the two forms,

$$[M]\{\ddot{x}\} + [C]\{\dot{x}(t)\} + [K]\{x(t)\} = f(t), \tag{1}$$

or,

$$\mathbf{M}\,\ddot{\mathbf{x}}(t) + \mathbf{C}\,\dot{\mathbf{x}}(t) + \mathbf{K}\,\mathbf{x}(t) = \mathbf{f}(t), \tag{2}$$

where $[M]$ or $\mathbf{M}$, $[C]$ or $\mathbf{C}$, and $[K]$ or $\mathbf{K}$ are the mass, dissipation and stiffness matrices, respectively, and $[\ddot{x}]$ or $\ddot{\mathbf{x}}$, $[\dot{x}]$ or $\dot{\mathbf{x}}$, $[x]$ or $\mathbf{x}$, and $[f]$ or $\mathbf{f}$ are the acceleration, velocity, displacement, and input force vectors, respectively."

2.3 Figures and tables

Figures and tables should be placed as close as possible to the place in the text where they are first mentioned and must be numbered consecutively in Arabic numerals. Figures must be mentioned either as "Fig. 1" in the middle of a sentence or as "Figure 1" at the beginning of a sentence.
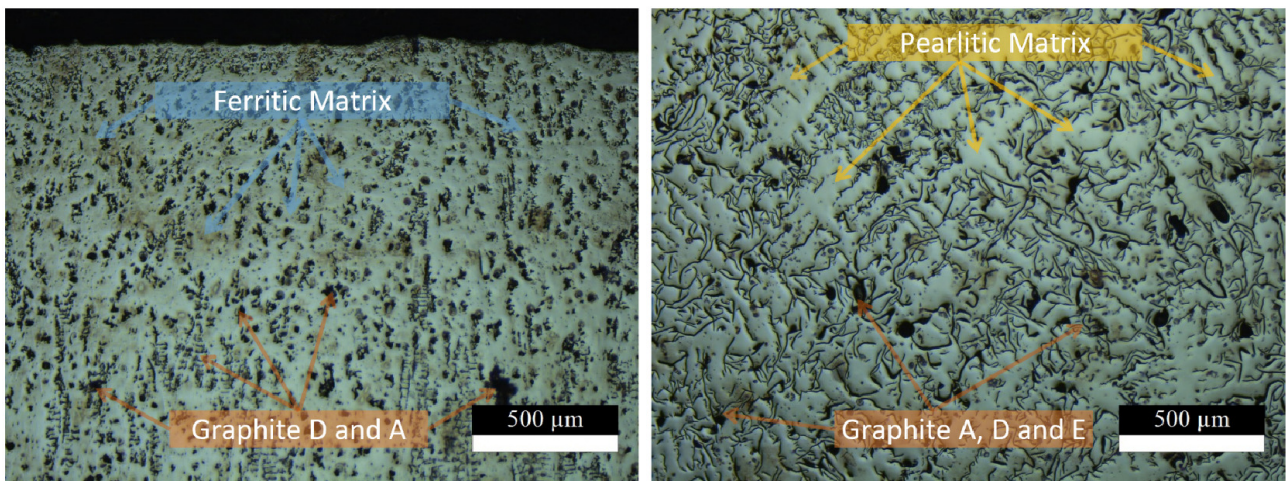

Figure 1. ASTM 48 (Grade 30) grey cast iron microstructure in border (left) and in the center (right), from Fernandes *et al.* (2023)

Both the figures and their captions must be centered in width. Figure captions should be centered and no longer than 3 lines.

A vertical space equivalent to a blank line must be inserted before and after each figure.

The legend for the data symbols as well as the labels for each curve should be included into the figure. Lettering should be large enough for ease reading. All units must be expressed in the S.I. (metric) system.

Color figures and high-quality photographs can be included in the manuscript. To reduce the file size and preserve the graphic resolution, figures must be saved into GIF (figures with less than 16 colors) or JPEG (for higher color density) files before being inserted in the manuscript.

Tables must be designated as either "Tab. 1" in the middle of a sentence or "Table 1" at the beginning of a sentence. Both the tables themselves and their titles must be centered in width. Table titles should be no longer than 3 lines. The

font and size used in the tables must be similar to that used in the body of the text (both in size and style). Units must be given in the S.I. (metric) system. Any explanations should be at the foot of the tables, not in the tables themselves.

A vertical space equivalent to a blank line must be inserted before and after each table. The design of the table margins is up to you. An example can be found in Tab. 1.

Table 1. Experimental results for flexural properties of CFRC-TWILL and CFRC-4HS composites.
Span/depth ratio = 35:1. Average results of 7 specimens.

Composite Properties	CFRC-TWILL	CFRC-4HS
Flexural Strength[1], MPa	209 $\pm$ 10	180 $\pm$ 15
Flexural Modulus[1], GPa	57.0 $\pm$ 2.8	18.0 $\pm$ 1.3
Mid-span deflection at the failure stress, mm	2.15 $\pm$ 1.90	6.40 $\pm$ 0.25

[1] Measured at 25 ^{o}C.

3. ACKNOWLEDGEMENTS

4. REFERENCES

The list of references must be inserted as a new section at the end of the manuscript. The first line of each reference must be left-justified. All other lines must be indented 0.5 cm from the left margin. All references listed in the reference list must have been mentioned in the text.

References must be listed in alphabetical order by the last name of the first author. See the following examples:

Carvalho, J.C.M., Martins, D., Simoni, R. and Simas, H., 2018. *Multibody Mechatronic Systems - Proceedings of the MUSME Conference held in Florianópolis, Brazil, October 24-28, 2017*. Mechanisms and Machine Science. Springer International Publishing.

Choma, E.F. and Ugaya, C.M.L., 2017. "Environmental impact assessment of increasing electric vehicles in the brazilian fleet". *Journal of Cleaner Production*, Vol. 152, pp. 497–507.

EPE, 2022. "National energy balance 2022, final report (*in Portuguese*)". Empresa de Pesquisa Energética EPE, Rio de Janeiro, epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-675/topico-638/BEN2022.pdf. Accessed 02 May 2023.

Fernandes, G.H.N., Bazon, V.T., Barbosa, L.M.Q., França, P.H.P., da Silva, M.B., Uddin, M., Martins, P.S. and Machado, Á.R., 2023. "Performance comparison between internally cooled tools and flood cooling during grey cast iron turning". *Journal of Manufacturing Processes*, Vol. 85, pp. 817–831.

Mendes, N., Moura, L.M. and Riquelme, S., 2024. "Device for measuring atmospheric longwave radiation and its measurement method (*in Portuguese*)". Patent, INPI - Instituto Nacional da Propriedade Industrial, Registry number: BR1020180737406, Application date: November 19, 2018, Grant date: September 10, 2024.

Mendonça, P.T.R. and Fancello, E.A., 2019. *The method of finite elements applied to mechanics of solids (in Portuguese)*. Editora Orsa Maggiore, Florianópolis.

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MLA, 2020. "MLA works cited: Electronic sources (web publications)". Modern Language Association, Purdue Online Writing Laboratory, Purdue University, owl.purdue.edu/owl/research_and_citation/mla_style/mla_formatting_and_style_guide/mla_works_cited_electronic_sources.html. Accessed 02 May 2023.

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Pitz, D.B., Marxen, O. and Chew, J.W., 2017a. "Direct numerical simulation of vacillation in convection induced by centrifugal buoyancy". In *APS Division of Fluid Dynamics Meeting Abstracts*. pp. F33–006.

Pitz, D.B., Marxen, O. and Chew, J.W., 2017b. "Onset of convection induced by centrifugal buoyancy in a rotating cavity". *Journal of Fluid Mechanics*, Vol. 826, pp. 484–502.

Porto-Hernandez, L., Vargas, J., Munoz, M., Galeano-Cabral, J., Ordonez, J., Balmant, W. and Mariano, A., 2023. "Fundamental optimization of steam rankine cycle power plants". *Energy Conversion and Management*, Vol. 289, p. 117148.

Santos, D.D., Furtado, G.M., Frey, S.L., Naccache, M.F. and de Souza Mendes, P.R., 2013. "Numerical investigation of elastic and viscous effects on inertial viscoplastic fluid flows". In *Proceedings of the 22nd International Congress of Mechanical Engineering - COBEM 2013*. Ribeirão Preto, Brazil.

Santos, V.O., 2020. *Experimental and numerical analysis of the fretting corrosion mechanism at the stem-head and stem-cement contact surfaces of hip prostheses (in Portuguese)*. Master's thesis, Graduate Program in Mechanical Engineering, Federal University of Santa Catarina, Florianópolis, Brasil.

Sestito, G.S., Venter, G.S., Ribeiro, K.S.B., Rodrigues, A.R. and da Silva, M.M., 2022. "In-process chatter detection in micro-milling using acoustic emission via machine learning classifiers". *The International Journal of Advanced Manufacturing Technology*, Vol. 120, No. 11, pp. 7293–7303.

Souza, F.C.R., 2022. *Effect of Texturing on PCD Tools in the Turning of Aluminum 2011-T4 (in Portuguese)*. Ph.D. thesis, Federal University of Uberlândia, Uberlândia, Brasil.

Vargas, J.V.C., Ordonez, J.C., Gardolinski, J.E.F.C., Hovsapian, R. and Raimundo, R.C., 2021. "Real time hydrogen self-supplied alkaline membrane fuel cell stack". Patent, United States Patent and Trademark Office, Registry number: US20210194027A1, Application date: June 24, 2021.

5. RESPONSIBILITY NOTICE

The following text, properly adapted to the number of authors, must be included in the last section of the paper:
The author(s) is (are) solely responsible for the printed material included in this paper.