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## ABSTRACT

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*Keywords: Time-frequency analysis, Failure diagnosis, Diagnostics in rotating machinery, Vibration analysis .*

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The paper must include the following: (1) Introduction, (2) Theoretical Background, (3) Methodology, (4) Data Collection and Analysis, (5) Discussion and Results, (6) Conclusions and (7) References. Supplementary data and other sections are optional. You will usually want to divide your article into (numbered) sections and subsections (perhaps even sub-subsections). Code section headings using the options in the 'Styles' menu. Headings should reflect the relative importance of the sections. Note that text runs on after a 4th order heading. Use the heading style for the whole paragraph, but remove the italic coding except for the actual heading.

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**Table 1.** Defect frequencies for the P&W bearing

Bearing	Rotation Speed (RPM)	Cage fault ( $F_{CF}$ ) Hz	Inner raceway fault ( $F_{ORF}$ ) Hz	Outer raceway fault ( $F_{IRF}$ ) Hz	Ball fault Hz
First Bearing	34200	261.34	3704.86	3136.14	3403.8
	32000	244.3	3463.43	2932.56	3182.86
	25600	195.6	2772	2347.15	2547.48
Second Bearing	34200	261.34	3703.86	3136.14	3403.8
	32000	244.3	3463.43	2932.56	3182.86
Third Bearing	1000	7.64	108.32	91.71	99.54
	2000	15.28	216.58	183.38	199.03

##### 4.1. Tables and figures

For purposes of review, all tables and figures should reside within the manuscript at the location where they are first mentioned in the text. If your paper is accepted, in the final production-ready draft, please group the tables and figures at the end of the manuscript. Figures, Schemes, and Tables should be numbered. Photos, graphs, line drawings, and other nontabular graphics should be high resolution (at least 200 dpi). Do not use shading as background or to indicate differences in quantity (e.g., as sometimes appears in bar graphs); instead, use patterns such as horizontal, vertical, diagonal, and zigzag lines (avoid fine dot patterns). Line weight should be at least 1 point. The image size should be large enough so that even if the figure is reduced to fit a single-column width (18 cm), the type will be no smaller than 8 points. If any of your figures contain colors other than black, and retaining those colors is critical to the meaning of the image, please indicate this information in the cover letter.

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1. The first entry in this list

2. The second entry

2.1. A subentry

3. The last entry

- A bulleted list item
- Another one

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$$P_L = \sum_{i=1}^n \sum_{j=1}^n P_{Gi} B_{ij} P_{Gj} \quad (1)$$

#### 5. Experimental section

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introductory paragraph containing information concerning solvents, sources of less common starting materials, special equipment, etc., should be provided. This section need to include the type of elemental analyzer and the name of the analytical lab. The procedures should be written in the past tense and include the weight, volume, etc., in parentheses after the names of the substances or solvents. General reaction conditions should be given only once. The title of an experiment should include the chemical name and compound number of the product prepared; subsequently, this compound should be identified by its number.

#### Acknowledgments

Acknowledgments may be inserted at the end of the paper, before the references, not as a footnote to the title. Use the unnumbered Acknowledgements Head style for the Acknowledgments heading.

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