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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 29716.1-2013

**Mechanical vibration and shock -- Signal processing -- Part 1:
General introduction**

机械振动与冲击 信号处理 第1部分：引论

(English Translation)

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Foreword

GB/T 29716 "Mechanical vibration and shock Signal Processing", to be divided into the following sections.

- Part 1. Introduction;
- Part 2. Fourier transform of the time domain analysis window;
- Part 3. bilinear joint time-frequency analysis methods;
- Part 4. Shock response spectrum analysis;
- Part 5. Time scale analysis.

This part of GB/T 29716 Part 1.

This section drafted in accordance with the rules of GB/T 1.1-2009 and GB/T 20000.2-2009 given.

This section uses the translation method identical with ISO 18431-1 "Mechanical vibration and shock - Signal processing - Part 1. Introduction." this part of the National mechanical vibration, shock and condition monitoring Standardization Technical Committee (SAC/TC53) and focal points.

This section is drafted. Shanghai Jiaotong University, China Shipbuilding Industry Corporation seventh eleven Institute.

Introduction

In recent years, with the widespread use of digital signal acquisition systems and computerized data processing equipment, almost all of the data analysis are through Digitized data through mathematical operations to complete. Thus, data analysis is mainly digital signal processing.

Shock and vibration test data analysis should be considered as part of the experimental

program staff. This process includes data from experimental design to comment Assessment and understanding of all the steps.

Consider the effect of instrument sensitivity, this section assumes that the data has been sufficiently reduced. The data in this section are considered to be related to a physical the amount of time sequence of samples as velocity, acceleration, displacement or force component. Experimental methods to obtain these data do not fall within the scope of this section.

Mechanical vibration and shock Signal Processing Part 1. Introduction

1 Scope

This section GB/T 29716 defines the mathematical transformation include physical units, including, these transformations will impact various types of vibration data conversion Into a room suitable for quantitative description and comparison of different experiments to quantify the form. It can be used for deterministic or random signals, transients or continuous signal Vibration analysis. Various categories of signals are defined in Chapter 6.

We should attach great importance to correctly distinguish the type of signal being analyzed, so that the correct conversion and units, especially in terms of frequency domain analysis.

Data can be obtained on the mechanical structure of experimental measurements can be obtained from the numerical simulation of the mechanical structure. Due to the mechanical structure types Diverse, such as microscopic instruments, musical instruments, cars, machinery, building and civil engineering structures, etc., so the data types involved are very extensive. through these Data can be sure that the machine or a human response to mechanical vibration and shock.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member, undated references, the latest edition (including any amendments) applies to this document.

ISO 2041:1990 Vibration and shock - Vocabulary (Vibrationandshock-Vocabulary)

3 Terms and Definitions

As defined in ISO 2041 and the following terms and definitions apply to this document.

Diego Mixed aliasing Misrepresented by spectral energy above the Nyquist frequency, and spectral components below the Nyquist frequency mixing caused.

Confidence Interval at a given probability, the true value range statistics exist.

Data data

A sampling of the physical measured value.

Statistics freedom statisticaldegreesoffreedom Statistical probability estimate the number of independent variables.

Frequency resolution the frequency difference between two adjacent lines.

Line number numberoflines it displays the number of lines.