

Victor Kravets
Vladimir Kravets
Olexiy Burov

Reliability of Systems



LAMBERT
Academic Publishing

Impressum / Imprint

Bibliografische Information der Deutschen Nationalbibliothek: Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

Alle in diesem Buch genannten Marken und Produktnamen unterliegen warenzeichen-, marken- oder patentrechtlichem Schutz bzw. sind Warenzeichen oder eingetragene Warenzeichen der jeweiligen Inhaber. Die Wiedergabe von Marken, Produktnamen, Gebrauchsnamen, Handelsnamen, Warenbezeichnungen u.s.w. in diesem Werk berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, dass solche Namen im Sinne der Warenzeichen- und Markenschutzgesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften.

Bibliographic information published by the Deutsche Nationalbibliothek: The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Any brand names and product names mentioned in this book are subject to trademark, brand or patent protection and are trademarks or registered trademarks of their respective holders. The use of brand names, product names, common names, trade names, product descriptions etc. even without a particular marking in this work is in no way to be construed to mean that such names may be regarded as unrestricted in respect of trademark and brand protection legislation and could thus be used by anyone.

Coverbild / Cover image: www.ingimage.com

Verlag / Publisher:

LAP LAMBERT Academic Publishing

ist ein Imprint der / is a trademark of

OmniScriptum GmbH & Co. KG

Bahnhofstraße 28, 66111 Saarbrücken, Deutschland / Germany

Email: info@lap-publishing.com

Herstellung: siehe letzte Seite /

Printed at: see last page

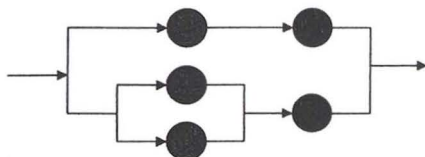
ISBN: 978-3-659-83413-4

Copyright © 2016 OmniScriptum GmbH & Co. KG

Alle Rechte vorbehalten. / All rights reserved. Saarbrücken 2016

Victor Kravets
Vladimir Kravets
Olexiy Burov

RELIABILITY OF SYSTEMS



Part 1

STATICS OF FAILURES

Elements of probability theory

Structural system reliability

Sensitivity matrix

Matrix significance

$$\begin{Bmatrix} P_{A_i}(A) & P_{A_i}(\bar{A}) \\ P_{\bar{A}_i}(A) & P_{\bar{A}_i}(\bar{A}) \end{Bmatrix}$$

$$\begin{Bmatrix} P_{A_i}(A_i) & P_{\bar{A}_i}(A_i) \\ P_{A_i}(\bar{A}_i) & P_{\bar{A}_i}(\bar{A}_i) \end{Bmatrix}$$

We consider in-depth mechanical, geometric, analytic models of assessment the reliability of systems based on the use of the scheme of cases, Euler-Venn diagrams, generating functions, state diagrams. The methods of qualitative and quantitative assessment of the reliability on the established time interval, based on structural reliability, the importance of a structural element, the sensitivity of the reliability of the system taking into account the duplication of most significant and unreliable elements. Common approaches are illustrated by solving problems of the analysis and synthesis of reliable systems. This book is recommended for engineers, teachers and students of high educational institutions, who in their practice pose and solve problems of reliability of technical systems. The book contains a number of new materials developed by the authors in the last years that have not been published before.

Victor Kravets: Professor, Department of Automobiles and Transportation facilities Automobile Sector, National Mining University, Ukraine. Vladimir Kravets: Department of Labor Security, Dnepropetrovsk national university of railway transport, Ukraine. Olexiy Burov: Baskin School of Engineering, University of California-Santa Cruz, CA, USA.



978-3-659-83413-4