PENINSULA PUBLISHING LLC

KHWARIZMIA
Vol. **(2026)**, 2026, **pp**. 31–38
ISSN: 3078-2694

Research Article

Mirce Science: Physical Scale of Machine In-service Reality

Jezdimir Knezevic[1,*]

[1] *Mirce Science Akademy, Bickleigh, Tiverton, EX16 8RF, UK*

ARTICLE INFO

Article History
Received 12 Dec 2025
Revised: 2 Feb 2026
Accepted 4 Mar 2026
Published 23 Mar 2026

Keywords
Mirce science,
machine in-service reality,
atom system,
solar system,
mechanisms of motion,
machine in-service performance.

ABSTRACT

The philosophy of Mirce science is based on the premise that the purpose of existence of any machine is to do expected work, which is considered to be done when a measurable function(s) is delivered through in-service time. However, experience teaches us that in-service performance of these machines gets discontinued by imposing phenomena of in-service reality, like: fatigue, operator induced errors, corrosion, creep, foreign object damage, a faulty weld, bird strike, perished rubber, shark bites, carburettor icing, space radiation, to name just a few. Consequently, maintaining the design-in performance beyond the delivery day requires a work to be done on a machine, like: troubleshooting, repairs, replacements, modifications, diagnostics, "cannibalisation", change of operational location/mode, and so forth. Thus, the motion of machines through in-service reality is governed by natural and human actions that are manifested through occurrences of observable in-service events mentioned above. For over 50 years the author has been conducted a systematic research focused on the full understanding of the mechanisms of these actions in order to predict and manage expected in-service performance of machines. Corrosion, as one of many well-known and observable mechanism of the motion of machines through in-service reality, is used in this paper to support the conclusion made. Thus, in Mirce science, the minimum physical scale of in-service reality of machines that must be addressed is between: the system Atom (10-10 metre), on one hand, the Solar system (1010 metre) on the other, for the accurate predictions of the in-service performance to be made.

1. INTRODUCTION

"Everything that the human race has done and thought is concerned with the satisfaction of felt needs". A. Einstein

During the history of human race, needs for transportation, communication, navigation and many others have been satisfied by human created machines, like: trains, aircraft, cars, computers, telephones, radars, radios satellites and so forth. They are constructed by assembling a well-defined number of parts in a pre-determined way. As they are functioning in a linear chains of cause and effect, governed by the well understood mechanisms of natural phenomena, their design-in performance, measured through speed, acceleration, power, range, energy usage, capacity and similar, could be accurately predicted by making use of Newton's and Hamilton's equations of mechanical motion, Coulomb's law of solid friction, Hook's law of stress and strain, Maxwell's equations of electrodynamics, Boltzmann's equations of thermodynamics, to name a few. All of them are based on the physical and chemical processes that are characterised by: certainty, continuity, reversibility, separability and independence of time, location and humans.

However, experience teaches us that in-service performance of machines, measured by the work done during a stated period of in-service time, like: hours flown in a year, electricity produced per month and similar get discontinued by phenomena like fatigue, operator induced errors, corrosion, creep, foreign object damage, a faulty weld, bird strike, perished rubber, shark bites, carburettor icing, space radiation, to name just a few. These phenomena are resulting from energy exchanges between machines and environment and are manifested as the loss of the ability to deliver need satisfying function(s). Consequently, a recovery work, like: repairs, replacements, modifications, diagnostics, "cannibalisation", change of operational location/mode, and so forth, need to be done on a machine to continue working.

Finally, the cumulative amount of "satisfied needs", measured by work done by a machine and work done on it, becomes known through post-service statistical analysis of data collected, usually presented by histograms and pie-charts. As the design-in and in-service performance of a machine are important for the users the accurate predictions of both must be done concurrently during their creation. While existing scientific equations and engineering methods existed for the prediction of in-service performance of a machine, in mid 1970s Dr Knezevic realised that there was nothing similar for the corresponding prediction of in-service performance. Thus, he systematically studied in-service behaviour of machines to:

*Corresponding author email: jezdimirknezevic@gmail.com
DOI: https://doi.org/10.70470/KHWARIZMIA/2026/003

- Physically observe the motion of machines through in-service reality over time and to measure their in-service performance
- Mathematically define a framework for describing the machine operation within an operational context to enable quantitative prediction of in-service performance
- Scientifically understand mechanisms that cause the motion of a machine through in-service reality to subject them to the predictive mathematical framework.

The outcomes of the research lead to the conclusions that the machine operation within an operational context is characterised by uncertainty, discontinuity, irreversibility, separability and dependence of time, location and humans. This lead to the establishment of the Mirce science, a new discipline that was defined by the author as, "The theory for predicting irreversible motion of machines through in-service reality, by subjecting mechanisms of causing actions to Mirce mechanics equations."[(1)]

The main objective of this paper is to show how the studies of motion of machines through in-service reality, performed by the author, had determined the minimum scale of in-service reality of machines that must be applied in order to for accurate predictions to be made.

It has been estimated that approximately 5% of an industrialised nation's income is spent on corrosion prevention and the maintenance or replacement of products lost or contaminated as a result of corrosion reactions. Thus, to illustrate the process of determination of the scale of machine in-service reality, corrosion is chosen, for no a particular reason, as one of many well-known and observable mechanisms that govern the motion of machines through in-service reality.

2. MACHINE CORROSION AS OBSERVED PHENOMENON OF IN-SERVICE REALITY

"The machine does not isolate man from
the great problems of nature, but plunges him more deeply into them." [(2)]

A motor vehicle is a self-propelled machine used for the transportation of people and cargo on the roads. The vehicle propulsion is provided by an engine, usually an internal combustion engine, electric traction motor or combination of the two. For legal purposes, motor vehicles are often classified as: cars, buses, motorcycles, off-road vehicles, light trucks, and heavy-duty trucks. They are constructed from a combination of materials focused on strength, safety, and weight reduction to improve efficiency. Advanced high-strength steel and aluminum are the primary materials for body and engine components supported by plastics for weight reduction, glass for visibility, and advanced composites like carbon fibber.

Design-in performance of motor vehicles, defined through maximum speed, acceleration, fuel consumption and so forth, are predicted and clearly measurable at the beginning of their in-service life. At that very instant of time, they became an integrated part of the in-service reality, which consists of natural phenomena and human actions (conscious and unconscious).

At the same time, the amount of "satisfied transportation needs" to be delivered by motor vehicle during the in-service time is one, out of many, not addressed at all. The situation is even less known regarding the amount of work to be done on a motor vehicle, measured in the amount of maintenance personnel hours and others. These measures of in-service performance of machines are not known, as they are not predictable by well-known equations of science mentioned above. However, some of them are occurring so frequently that they are even legislated by the governmental legal systems, world wide. For example, a Ministry of Transport (MOT) test is an annual legal requirement in the UK for cars over three years old, performed to ensure that they meet minimum safety and environmental standards. It checks vital components like lights, brakes, tyres, and emissions, but does not cover the general mechanical condition of the engine, clutch, or gearbox. One of the tasks of MOT is the check for excessive corrosion on structural, load-bearing parts (chassis, subframe, seatbelt mounts) using visual inspection, finger pressure, and a dedicated corrosion assessment tool (scraper/hammer). A fail occurs if metal is not rigid, crumbles, or has holes, especially within 30cm of suspension or safety mounts. It consists of the following steps[(3)]:

1. Introduction,
2. Prescribed areas,
3. Corrosion assessment,
4. Failure criteria within 'prescribed areas',
5. Failure criteria not within 'prescribed areas',
6. Highly stressed components,
7. Thin gauge steel pressings,
8. Vehicles with separate bodies,

---

(1) www.mirceakademy.com (accessed on 3rd March 2026)

(2) ." A. de Saint Exupery ,Wind, Sand and Stars, 1939

(3) Corrosion and MOT UK, https://www.gov.uk/guidance/mot-inspection-manual-for-private-passenger-and-light-commercial-vehicles/appendix-a-structural-integrity-and-corrosion

9. General guidance,
10. Acceptable methods of repair,
11. Unacceptable methods of repair,
12. Testable items mounted to plastic structures,
13. Repairs to non-metallic load-bearing structures,
14. Panel removal or replacement with different materials,
15. Diagrams to main load bearing areas,

In summary, the body of scientific knowledge used to predict design-in performance of motor vehicles is beyond and capabilities of addressing these aspects of in-service performance of motor vehicles. Hence, the Mirce science has been created by the author to provide answers to these and associated questions regarding the motion of machines through in-service reality and their predictions concurrently with predictions of their design-in performance. [1]

Selecting motor vehicles in this paper is the fact that they are one of the most known and used machines, but it is necessary to stress that the phenomena of corrosion addressed and questions raised are applicable to all machines created and used by humans anywhere on the planet Earth, and beyond.

Finally, the type of tasks, listed above, and all other performed by humans in respect to the motion of machines through in-service reality are within the scale of their physical and cognitive capabilities, governed by the evolution of natural world on the planet Earth.

3. MACHINE CORROSION AS ATOMISTIC PHENOMENON OF IN-SERVICE REALITY

Atomic theory, developed in XX century, represents the scientific understanding that all matter is composed of indivisible particles called atoms, which has evolved through historical contributions from philosophers and experimental chemists, over many centuries, leading to a comprehensive framework for understanding atomic structure and spectra. [5]

The basic building block of matter is an atom. It is the smallest unit into which matter can be divided without the release of electrically charged particles. It also is the smallest unit of matter that has the characteristic properties of a chemical element. As such, the atom is the basic building block of chemistry.

Most of the atom is empty space, consisting of a positively charged nucleus of protons and neutrons surrounded by a cloud of negatively charged electrons. The nucleus is small and dense compared to the electrons, which are the lightest charged particles in nature. Electrons are attracted to any positive charge by their electric force; in an atom, electric forces bind the electrons to the nucleus. [6]

Although, there are 118 chemical elements out which 94 are natural, all atoms are roughly the same size, irrespective of number of containing electrons. The radius of an atom measures between 1-2 x 10^{-10} m, meaning that there are approximately $5x10^{10}$ atoms of solid matter lined up in a row of one metre. [8]

Compared with the overall size of the atom, the nucleus is even smaller. In volume, the nucleus takes up only 10^{-14} of the space in the atom. In spite of the small size of the nucleus, virtually all the mass of the atom is concentrated there. The protons are massive, positively charged particles, whereas the neutrons have no charge and are slightly more massive than the protons. A fact that nuclei can have between 1 and about 250 nucleons, accounts for their wide variation in mass. Hence, the nucleus of hydrogen is 1,836 times more massive than an electron, while heavy nuclei are nearly $5x10^5$ times more massive. [6]

3.1 Corrosion process

Corrosion is the primary mechanisms of deterioration of metals, resulting from the contact with water (and moisture in the air), in majority of cases. Hence, metal-based components of motor vehicles get affected by corrosion during their in-service time. As some of them might have a significant impact on the safety of motor vehicles the MOT annual test are required. [4]

Corrosion processes are usually electrochemical in nature, where metal atoms are exposed to an environment containing water molecules which can give up electrons, becoming themselves positively charged ions, facilitating the process. This effect can have a local impact by forming a pit (sometimes a crack), or it can extend across a wide area to produce general wastage. Localised corrosion that leads to pitting may provide sites for fatigue initiation and, additionally, corrosive agents like seawater may lead to greatly enhanced growth of the fatigue crack. Pitting corrosion also occurs much faster in areas where microstructural changes have occurred due to welding operations.

As the rusting of steel is one of the most common types of corrosion in motor vehicles, it will be briefly addressed in this paper. Rusting of iron consists of the formation of hydrated oxide, $Fe(OH)_3$, $FeO(OH)$, or even $Fe_2O_3 \cdot H_2O$. It is an electrochemical process that requires the presence of water, oxygen and an electrolyte. In the absence of any one of these rusting does not occur to any significant extent. In air, a relative humidity of over 50% provides the necessary amount of water for the corrosion to occur. [2]

When a droplet of water containing a little dissolved oxygen falls on an iron it loses electrons (oxidation) and oxygen gains them (reduction) in the presence of water, which acts as an electrolyte to facilitate electron transfer: $Fe(s) \rightarrow Fe^{2+}(aq) +$

$2e^{-}$. The electrons, e, are quickly consumed by hydrogen ions from water, H_2O, and dissolved oxygen, $O_2(aq)$, at the edge of the droplet to produce water: $4e^- + 4H^+(aq) + O_2(aq) \rightarrow 2H_2O(l)$. More acidic water increases corrosion. If the pH is very low the hydrogen ions will consume the electrons anyway, making hydrogen gas instead of water: $2H^+(aq) + 2e^- \rightarrow H_2(g)$. Hydrogen ions are being consumed by the process. As the iron corrodes, the pH in the droplet rises. Hydroxide ions (OH^-) appear in water as the hydrogen ion concentration falls. They react with the iron(II) ions to produce insoluble iron(II) hydroxides or green rust: $Fe^{2+}(aq) + 2OH^-(aq) \rightarrow Fe(OH)_2(s)$.

The iron(II) ions also react with hydrogen ions and oxygen to produce iron (III) ions: $4Fe^{2+}(aq) + 4H^+(aq) + O_2(aq) \rightarrow 4Fe^{3+}(aq) + 2H_2O(l)$. The iron (III) ions react with hydroxide ions to produce hydrated iron (III) oxides: $Fe^{3+}(aq) + 3OH^-(aq) \rightarrow Fe(OH)_3(s)$.

The loose porous rust, $Fe(OH)_3$ can slowly transform into a crystallised form written as $Fe_2O_3 \cdot H_2O$ the familiar red-brown stuff that is commonly known as a "rust", motion of which through in-service life of motor vehicles is legally controlled through annual MOT inspections.

Having just explained the process of corrosion in atomistic terms, in respect to the Mirce science, the following question raises: where does oxygen, essential for the corrosion process, is coming from?

3.2 Photosynthesis

Humans breathe by inhaling oxygen and exhaling carbon dioxide. However, plants, algae, and some types of bacteria do the opposite, their leaves absorb carbon dioxide, water, and energy from the sun and turn into a sugar that feed them and emits oxygen into surrounding space, as by product. This process is known as photosynthesis. Approximately, 70% of Earth's atmospheric oxygen is created by microscopic marine organisms, primarily phytoplankton, through photosynthesis, with land plants like rainforests contributing the remaining 30%. [2]

Atomistic description of photosynthesis proceeds in the following manner: a water molecule, H_2O, combines with a carbon dioxide molecule, CO_2, and forms a building block, CH_2O, for many organic compounds, in the following way: $CO_2 + H_2O \rightarrow CH_2 + O_2 - 5eV$. This atomic restructuring requires 3.33 eV of energy to break the bonds between the hydrogen and oxygen in the water molecule and 1.68 eV more to remove the oxygen atom from CO_2. This atom then combines with another oxygen atom from molecule H_2O to yield the molecule O_2. [7]

The above process takes place in the green leaf that takes the required energy from the sunlight quanta. Each chemical bond is formed by a pair of electrons. Therefore, when two hydrogen-oxygen bonds are broken four electrons have to be shifted. It was found that for this purpose at least eight quanta of red light are needed, i.e. two quanta per electron. Therefore, the detailed photosynthesis equation has the form: $CO_2 + H_2O \rightarrow 8h\nu \rightarrow CH_2O + O_2$.

A quantum of red light with a wavelength of 7000 angstroms has energy of 1.8 eV, and the total energy of eight quanta is 14.4 eV. One third of this energy is stored as the energy of chemical bonds in the glucose molecule. Hence, when human drink sweet tea and breathe, the oxygen molecules picked up by haemoglobin combine in the presence of enzymes with glucose molecules in the reverse reaction liberating the energy of sunlight stored by chlorophyll, which in the final analysis supports our life., thus: $CH_2O + O_2 \rightarrow H_2O + CO_2$.

The simplicity of the photosynthesis equation is misleading: this is not just another reaction but, rather, a complex biochemical process, which incorporates several stages and, dozens of various reactions between molecules involved. [3].

From Mirce science point of view, the above described process of photosynthesis by plants raises the essential question, how does the Sun generate energy contained in red light?

4. MACHINE CORROSION AS COSMIC PHENOMENON OF IN-SERVICE REALITY

The Sun generates energy primarily through nuclear fusion. It is the process where two light atomic nuclei merge to form a single, heavier nucleus, releasing massive amounts of energy in the process. It takes place in the core of the Sun where extreme pressure and temperature of 15×10^6°C force hydrogen nuclei to fuse into helium. As the helium nucleus has less mass than the four protons, the remaining mass creates high-energy gamma-ray photons. These photons are immediately absorbed and re-emitted by surrounding plasma, moving in a random, zigzag path, known as a "random walk." It takes roughly 10,000 to 170,000 years for this energy to reach the photosphere of the Sun. During that process the gamma rays have been converted into many lower-energy photons, including visible light, ultraviolet, and infrared radiation, which then escape into surrounding space. Thus, the Sun acts as a giant heat engine, with fusion constantly replacing the energy that radiates away from its surface. [7]

Each second the Sun radiates 4.2×10^9 kg of photons, out of which Earth receives only 1.85 kg, which keeps it green and warm. Owing to them rivers flow, winds blow, plants grow and the human race flourishes. However, two kilograms of photons is not that small quantity. From Einstein's formula $E=mc^2$ their energy is 1.7×10^{17} joules, which is 20×10^3 times the power of the world's industry (about 10^{13} watts). About a half of that energy (0.8×10^{17} watts) reaches the terrestrial surface, which is 5×10^{14} square metres, making the average power of the solar radiation at ground level is 160 watts/m^2.

The 99.9 % of it is absorbed by the soil, and goes into the evaporation of water, causing winds, thunderstorms, and similar phenomena, loosely called the weather. [8]
In summary, only 0.1 per cent of the radiant energy of the Sun (around 10^{14} watts) supports all the living things on Earth, from bacteria to animals and human, through photosynthesis of organic substances from carbon dioxide and water in plants, constituting an important part of a machine in-service reality, perceived by Mirce science.

5. PHYSICAL SCALE OF MACHINE IN-SERVICE REALITY

Fully aware that the accurate predictions of the in-service performance of a future machine cannot be improved by doing better statistics on the past data, the author systematically collected the physical evidence about the occurrences of in-service events throughout in-service lives for variety of machines. Having obtained the "physical evidence" of the observed events of a machine in-service reality the author set up a very detailed research programme to understand their causing mechanisms, which represented a real challenge. Answers to the questions "what is the real cause of say, fatigue, the wind direction change, suncups formation on the blue ice runway, faulty weld, bird strike, perished rubber, corrosion, maintenance induced error, shark bites, carburettor icing and so forth have to be provided. Without known answers to those questions the accurate predictions of their future in-service performance is not possible, and without ability to predict the future, the use of the word science becomes inappropriate.
Based on the real life observations conducted over several decades the author concluded that, from Mirce science point of view, the physical scale within which a full understanding of causing mechanisms should be based within the following scale [1]:

- The "bottom end" of the physical reality, which is at the level of the system atom that exist in the region of 10^{-10} of a metre,
- The "top end" of the physical reality, which is at the level of the solar system that stretches in the physical scale around 10^{+10} of a metre.

This range is the minimum sufficient scale of the in-service reality that enables the understanding of the relationships between causing actions and observed in-service events to obtain enough information for the accurate predictions of the motion of machines through in-service reality to be made, as shown in Figure 1.

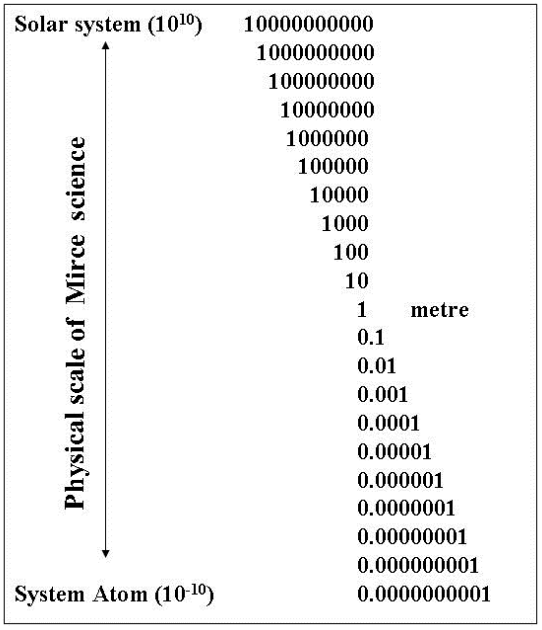

Fig. 1. Physical scale of a machine in-service reality

In summary, the motion of machines through in-service reality is facilitated by the conversions of the following forms of energy: heat, light, electrical, magnetic, chemical, atomic, mechanical and sound, defined by the laws of thermodynamics, caused by natural phenomena and human actions.

6. SUMMARY

Mirce science is a new discipline that studies the motion of machines through in-service reality in respect to their in-service performance, which is measure by the amount of work done, in the given interval of in-service time.

Fully aware that the accurate predictions of the in-service performance of the future machines cannot be improved by doing better statistics on past data, the author systematically collected the physical evidence about the occurrences of in-service events throughout lives of variety of machines with the objective of understanding the governing mechanisms, like: corrosion, fatigue, the wind direction change, suncups formation on the blue ice runway, faulty weld, bird strike, perished rubber, solar radiation, maintenance induced error, carburettor icing, to name just a few. Studies also included machine human actions that facilitated the continuation of the motion of machines through in-service reality, like replacement, repairs (as good as new or as bad as old), modifications and so forth.

After a more than fifty years of the systematic research, very briefly depicted in this paper, the author concluded that, from Mirce science point of view, the physical scale within which a full understanding of causing mechanisms should be based within the following scale: the "bottom end", of the physical world, namely with the system atom (10^{-10} m) and to finish at the"top end" of the physical world, the solar system (10^{10} m). [1] This range is the minimum sufficient "physical scale" which enables the understanding of cause-effect relationships of the motion of machines through in-service reality to gain information for the accurate predictions.

It is necessary to point out that the physical scale of Mirce science, defined in the paper, is suitable for the predictions of the motions of machine in the physical reality of planets and moons within the solar system, where the amount of oxygen and water available will have a significant impact on their corrosion processes. In the Appendix is given a list and the link to the relevant papers that depicts the most important mechanisms of different machines, recently studied, by the author.

Finally, by applying the knowledge of Mirce science during the design process it becomes possible to accurately predict expected in-service performance of each design alternative, at the time when constructive courses of action could be taken. This could provide a considerable reduction of testing time, data collecting activities and modifications, which in turn could provide a considerable reduction in development cost and safety risk.

Funding:

The authors declare that no financial aid or sponsorship was received from any external agencies or institutions for this study. All research activities were independently carried out.

Conflicts of Interest:

The authors declare no conflicts of interest.

Acknowledgment:

The authors are sincerely grateful to their institutions for their invaluable guidance and technical support.

References

[1] J. Knezevic, *Origin of Mirce Science*. Exeter, U.K.: MIRCE Science, 2017, p. 232, ISBN: 978-1-904848-06-6.

[2] A. Pluchino, A. E. Biondo, and A. Rapisarda, "Exploring the Role of Talent and Luck in Getting Success," Acta Physica Polonica B, Proceedings Supplement, vol. 12, no. 1, pp. 17–24, Jan. 2019, doi: 10.5506/APhysPolBSupp.12.17..

[3] R. F. W. Bader, *An Introduction to the Electronic Structure of Atoms and Molecules*. Clark Irvin, 1970, p. 240.

[4] W. D. Callister, *Materials Science and Engineering: An Introduction*, 4th ed. New York, NY, USA: John Wiley & Sons, 1997, p. 856, ISBN: 0-471-13459-7.

[5] N. Bohr, *Atomic Physics and Human Knowledge*. New York, NY, USA: Dover Publications, 2010, p. 101, ISBN-10: 0-486-47928-5.

[6] E. B. Uvarov and A. Isaacks, *Dictionary of Science*. London, U.K.: Penguin, 1993, ISBN: 0-14-0512662-4.

[7] L. I. Ponomarev, *The Quantum Dice*. Bristol, U.K.: Institute of Physics Publishing, 1993, p. 251, ISBN: 0-7503-0241-0.

[8] *Encyclopaedia Britannica*, Millennium 2nd ed., CD-ROM, 2013.

Appendix

Selected list of mechanisms of machine in-service reality studied by the author

Mirce Science: Moon Night as a Mechanism of the Motion of Space Machines through In-service Reality
https://www.researchgate.net/publication/398427206_Mirce_Science_Moon_Night_as_a_Mechanism_of_the_Motion_of_Space_Machines_through_In-service_Reality_MSA2025-11-29

Mirce Science: Metals from Spacecraft Re-entry as Functionability Mechanism in Human Modifying Stratosphere
https://www.researchgate.net/publication/397179428_Mirce_Science_Metals_Aerosol_from_Spacecraft_Reentry_as_a_Functionability_Mechanism_in_Human_Modifying_Stratosphere

Mirce Science: Maintenance Actions at the Distance of 592 Million Kilometres from Earth on NASA's Juno Spacecraft

https://www.researchgate.net/publication/396146889_Mirce_Science_Maintenance_Actions_at_the_Distance_of_592_Million_Kilometres_from_Earth_on_NASA's_Juno_Spacecraft
Mirce Science: Impact of Bees on Aircraft Functionability
https://www.researchgate.net/publication/394054003_Mirce_Science_Impact_of_Bees_on_Aircraft_Functionability_MIRCE_Science_unique_identifier_MSA2025-7-28
Mirce Science: Impact of Windscreen Damage on Functionability Performance of Commercial Aircraft
https://www.researchgate.net/publication/391271168_Mirce_Science_Impact_of_Windscreen_Damage_on_Functionability_Performance_of_Commercial_Aircraft_Annals_of_MIRCE_Science_MSA2025-4-28
Mirce Science: Impact of Windscreen Damage on Functionability Performance of Commercial Aircraft
https://www.researchgate.net/search.Search.html?query=Mirce+Science%3A+Impact+of+Windscreen+Damage+on%C2%A0Functionability+Performance+of+Commercial+Aircraft%C2%A0&type=publication
Mirce Science: Impact of Bed Bugs Infestations on Functionability Performance of Commercial Aircraft
https://www.researchgate.net/search.Search.html?query=Mirce+Science%3A+Impact+of+Bed+Bugs+Infestations+on+Functionability%C2%A0Performance+of+Commercial+Aircraft&type=publication
Clear Air Turbulence as a Mechanism of the Motion of Aircraft through Mirce Space
Clear Air Turbulence as a Mechanism of the Motion of Aircraft through MIRCE Space
Functionability Management of Autonomously Working Systems on Earth Affected by Impact of Severe Space Weather on Orbiting Satellites
Functionability Management of Autonomously Working Systems on Earth Affected by Impacts of Severe Space Weather on Orbiting Satellites
Mirce Science: Lightening as an Imposing Functionability Action
MIRCE Science: Lightning as an Imposing Functionability Action
Shark Bite as a mechanism of Motion of Submarine Cables through MIRCE Space
Shark Bite as a Mechanism of Motion of Submarine Cables through MIRCE Space. Annals of MIRCE Science. MSA2024-6-6
Space Weather as a Mechanism of Autonomous Trains in MIRCE Science
Space Weather as a Mechanism of Motion of Autonomous Trains in MIRCE Science
Pre-Determined Debris Avoidance Manoeuvres (PDAMs) as Mechanisms of Motion of International Space Station through MIRCE Space
Pre-Determined Debris Avoidance Maneuvers (PDAMs) as Mechanism of Motion of International Space Station through MIRCE Space
MIRCE Science: Solar Storm as a Mechanism of Motion of Autonomously Working Systems through MIRCE Space
MIRCE Science: Solar Storm as a Mechanism of Motion of Autonomously Working Systems Through MIRCE Space
Orbital Launch Anomalies as Mechanisms of Motion of Space Rockets through MIRCE Space
Orbital Launch Anomalies as Mechanisms of Motion of Space Rockets through MIRCE Space
Space Weather as a Mechanism of Motion of Autonomous Ships in MIRCE Science
Space weather as a mechanism of motion of autonomous ships in MIRCE science
Accumulation of Martian Dust as a Mechanism of a Motion of Working Systems through MIRCE Space
Accumulation of Martian Dust as a Mechanism of a Motion of Working Systems Through MIRCE Space
Space Hurricane as a Mechanism of a Motion of a Spacecraft through MIRCE Space
space hurricane as a mechanism of a motion of a spacecraft through m i r c e space
Design Impact on Human Error in Maintenance
https://www.researchgate.net/publication/356504619_Design_Impact_on_Human_Error_in_Maintenance
MIRCE Science Approach to maintenance of Microbial Contamination of Fuel Tanks in COVID-19 Grounded Aircraft
Science of Maintenance Journal homepage www.m-sci.rs MIRCE Science approach to maintenance of microbial contamination of fuel tanks in COVID-19 grounded aircraft
COVID-19 Pandemic as a Mechanism of the Motion of an Aircraft in MIRCE Mechanics
COVID-19 Pandemic as a Mechanism of the Motion of an Aircraft in MIRCE Mechanics
Emergency Oxygen Provisions as a Mechanism of the Motion of an Aircraft through MIRCE Space
Emergency Oxygen Provision as a Mechanism of the Motion of an Aircraft through MIRCE Space
Microbial Decontamination of Fuel Tanks as a Mechanism of the Motion of an Aircraft through MIRCE Space
Microbial Decontamination of Fuel Tanks as a Mechanism of the Motion of an Aircraft through MIRCE Space
Fireless, Burning Smell Driven, Mayday Landings of Commercial Aircraft as a Mechanisms of Motion in MIRCE Mechanics
FIRELESS, BURNING SMELL DRIVEN, MAYDAY LANDINGS OF COMMERCIAL AIRCRAFT AS A MECHANISMS OF MOTION IN MIRCE MECHANICS
Troubleshooting as a Mechanism of Motion of Functionable System through MIRCE functionability Field

Troubleshooting as a Mechanism of Motion of Functionable System through MIRCE Functionability Filed
Impact of High-Altitude Ultraviolet Radiation on Functionability of Flight Crews
Impact of High-Altitude Ultraviolet Radiation on Functionability of Flight Crews
Glare as a Mechanism of the motion on an Aircraft Through the MIRCE Functionability Field
Glare as a Mechanism of the Motion of an Aircraft Through the MIRCE Functionability Field
Pitot Tube Blockage by Mud-dauber Wasp as a Mechanisms of a motion of an Aircraft through Mirce functionability Field
Pitot tube blockage by mud-dauber wasp as a mechanism of a motion of an aircraft through MIRCE functionability field
Fuel Tank Explosion as a Mechanism of Motion in MIRCE Mechanics
Fuel Tank Explosion as a Mechanism of Motion of an Aircraft through MIRCE Space
Minimum Equipment List as a Mechanism of Motion in MIRCE Mechanics
Minimum Equipment List as a Mechanism of Motion in MIRCE Mechanics
Post-maintenance Flight Test as a Mechanism of Motion in MIRCE Mechanics
Post-maintenance flight test as a mechanism of motion in MIRCE mechanics
Mirce-mechanics Approach to the Analysis of the Cosmic Radiation Impact on Aviation Reliability
Mirce-mechanics approach to the analysis of the cosmic radiation impact on aviation reliability
Volcanic Ash as a Mechanism of a Motion in Mirce Mechanics
Volcanic Ash as a Mechanism of a Motion in Mirce Mechanics
Aerotoxic Syndrome as a Mirce Mechanics Phenomenon
Aerotoxic syndrome as a Mirce mechanics phenomenon
Improving Quality of Maintenance through Simplified Technical English
Improving quality of maintenance through Simplified Technical English
Aircarft Ground icing and De-icing Process as a Mechanisms of the Motion in Mirce Mechanics
Aircraft ground icing and de-icing processes as mechanisms of the motion in Mirce Mechanics