

Solution Vector Analysis By S M Yusuf

Newton's laws of motion

example, a body's velocity vector might be $\mathbf{v} = (3\text{ m/s}, 4\text{ m/s})$, indicating that

Newton's laws of motion are three physical laws that describe the relationship between the motion of an object and the forces acting on it. These laws, which provide the basis for Newtonian mechanics, can be paraphrased as follows:

A body remains at rest, or in motion at a constant speed in a straight line, unless it is acted upon by a force.

At any instant of time, the net force on a body is equal to the body's acceleration multiplied by its mass or, equivalently, the rate at which the body's momentum is changing with time.

If two bodies exert forces on each other, these forces have the same magnitude but opposite directions.

The three laws of motion were first stated by Isaac Newton in his *Philosophiæ Naturalis Principia Mathematica* (Mathematical Principles of Natural Philosophy), originally...

2021 in science

; Webb, Claire Isabel; Zic, Andrew; Drew, Jamie; Worden, S. Pete (November 2021). "Analysis of the Breakthrough Listen signal of interest blc1 with a

This is a list of several significant scientific events that occurred or were scheduled to occur in 2021.

Woody plant encroachment

; McKain, S.; Morecroft, M.D.; Morrison-Bell, C.; Watts, O., eds. (2021). *Nature-based Solutions for Climate Change in the UK: A Report by the British*

Woody plant encroachment (also called woody encroachment, bush encroachment, shrub encroachment, shrubification, woody plant proliferation, or bush thickening) is a natural phenomenon characterised by the area expansion and density increase of woody plants, bushes and shrubs, at the expense of the herbaceous layer, grasses and forbs. It refers to the expansion of native plants and not the spread of alien invasive species. Woody encroachment is observed across different ecosystems and with different characteristics and intensities globally. It predominantly occurs in grasslands, savannas and woodlands and can cause regime shifts from open grasslands and savannas to closed woodlands.

Causes include land-use intensification, such as overgrazing, as well as the suppression of wildfires and the...

Economics of biodiversity

control can reduce economic losses incurred as a result of pests, disease vectors, and invasive species. However, its use can have unintended effects where

Biodiversity plays an essential role in the global economy. This includes its role in providing ecosystem services - the benefits that humans get from ecosystems. Biodiversity plays a major role in the productivity and functioning of ecosystems, affects their ability to provide ecosystem services. For example, biodiversity is a source of food, medication, and materials used in industry. Recreation and tourism are also examples of human economic activities that rely on these benefits. In 2018, the WWF Living Planet Report argues that the whole global economy of US\$125 trillion ultimately relies on nature.

The benefits of biodiversity are often evaluated in an anthropocentric way and the inherent value of biodiversity, outside of its benefits to humanity, has been debated by economists. Despite...

Climate change in the Philippines

caused by environmental hazards. Climate change, heavy rains, and increased temperatures are linked with the increased transmission of vector and waterborne

Climate change is having serious impacts in the Philippines such as increased frequency and severity of natural disasters, sea level rise, extreme rainfall, resource shortages, and environmental degradation. All of these impacts together have greatly affected the Philippines' agriculture, water, infrastructure, human health, and coastal ecosystems and they are projected to continue having devastating damages to the economy and society of the Philippines.

According to the UN Office for the Coordination of Humanitarian Affairs (OCHA), the Philippines is one of the most disaster-prone countries in the world. The archipelago is situated along the Pacific Ocean's typhoon belt, leaving the country vulnerable to around 20 typhoons each year, a quarter of which are destructive. The December 2021 typhoon...

2023 in science

Shofiqul; Yusuf, Salim (12 January 2023). "Social isolation as a risk factor for all-cause mortality: Systematic review and meta-analysis of cohort studies"

The following scientific events occurred in 2023.

Metal-organic framework

Stanley, Philip M.; Huber, Dominik; Schuster, Michael; Albada, Bauke; Zuilhof, Han; Cokoja, Mirza; Fischer, Roland A. (2022-02-14). "Vectorial Catalysis in

Metal-organic frameworks (MOFs) are a class of porous polymers consisting of metal clusters (also known as Secondary Building Units - SBUs) coordinated to organic ligands to form one-, two- or three-dimensional structures. The organic ligands included are sometimes referred to as "struts" or "linkers", one example being 1,4-benzenedicarboxylic acid (H₂bdc). MOFs are classified as reticular materials.

More formally, a metal-organic framework is a potentially porous extended structure made from metal ions and organic linkers. An extended structure is a structure whose sub-units occur in a constant ratio and are arranged in a repeating pattern. MOFs are a subclass of coordination networks, which is a coordination compound extending, through repeating coordination entities, in one dimension, but...

2022–2023 global food crises

affected by many of the same issues. These issues range from greater heat stress to animal feed shortfalls and the spread of parasites and vector-borne diseases

During 2022 and 2023 there were food crises in several regions as indicated by rising food prices. In 2022, the world experienced significant food price inflation along with major food shortages in several regions. Sub-Saharan Africa, Iran, Sri Lanka, Sudan and Iraq were most affected. Prices of wheat, maize, oil seeds, bread, pasta, flour, cooking oil, sugar, egg, chickpea and meat increased. Many factors have contributed to the ongoing world food crisis. These include supply chain disruptions due to the COVID-19 pandemic, the Global energy crisis (2021–2023), the Russian invasion of Ukraine, and floods and heatwaves during 2021 (which destroyed key American and European crops). Droughts were also a factor; in early 2022, some areas of Spain and Portugal lost 60–80% of their crops due to widespread...

Textile industry in Bangladesh

67 (1): 67–82. JSTOR 24461672. Steinisch, Maria; Yusuf, Rita; Li, Jian; Rahman, Omar; Ashraf, Hasan M.; Strümpell, Christian; Fischer, Joachim E.; Loerbroks

The textile and clothing industries provide the most significant source of economic growth in Bangladesh's rapidly developing economy. Exports of textiles and garments are the principal source of foreign exchange earnings. By the end of December 2024, the Bangladeshi Garments Industry has earned \$50 Billion from exports, an 8.3% increase in the past year according to the Export Promotion Bureau (EPB). By 2002 exports of textiles, clothing, and ready-made garments (RMG) accounted for 77% of Bangladesh's total merchandise exports. Emerging as the world's second-largest exporter of ready-made garment (RMG) products, Bangladesh significantly bolstered employment within the manufacturing sector.

In 1972, the World Bank approximated the gross domestic product (GDP) of Bangladesh at US\$6.29 billion...

2015 in science

a geoengineering solution to CO2 emissions could be found, it would not be enough to save the oceans. A new comprehensive analysis of global glacier

A number of significant scientific events occurred in 2015. Gene editing based on CRISPR significantly improved. A new human-like species, *Homo naledi*, was first described. Gravitational waves were observed for the first time (announced publicly in 2016), and dwarf planets Pluto and Ceres were visited by spacecraft for the first time. The United Nations declared 2015 the International Year of Soils and Light-based Technologies.

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