DOWNLOAD PDF POINT PROCESSES AND PRODUCT DENSITIES

Chapter 1 : Central limit theorems for empirical product densities of stationary point processes

Point processes are random processes that are concerned with point events occurring in space or time. A powerful method of analyzing them is through a sequence of correlation functions, called product densities, introduced by Alladi Ramakrishnan.

Properties[edit] Isopropyl alcohol is miscible in water, ethanol , ether , and chloroform. It will dissolve ethyl cellulose , polyvinyl butyral , many oils, alkaloids, gums and natural resins. The process is colloquially called salting out , and causes concentrated isopropyl alcohol to separate into a distinct layer. Water-isopropyl alcohol mixtures have depressed melting points. This can be achieved using oxidizing agents such as chromic acid , or by dehydrogenation of isopropyl alcohol over a heated copper catalyst: Isopropyl alcohol may be converted to 2-bromopropane using phosphorus tribromide , or dehydrated to propene by heating with sulfuric acid. Like most alcohols, isopropyl alcohol reacts with active metals such as potassium to form alkoxides that can be called isopropoxides. The reaction with aluminium initiated by a trace of mercury is used to prepare the catalyst aluminium isopropoxide. Its major use at the time was not rubbing alcohol but for oxidation to acetone , whose first major use was in World War I for the preparation of cordite , a smokeless, low explosive propellant. Isopropyl alcohol and water form an azeotrope and simple distillation gives a material that is This process can use low-quality propene, and is predominant in the USA. Subsequent hydrolysis of these esters by steam produces isopropyl alcohol, by distillation. Diisopropyl ether is a significant by-product of this process; it is recycled back to the process and hydrolyzed to give the desired product. Heteropoly acid Direct hydration reacts propene and water, either in gas phase or in liquid phase, at high pressures in the presence of solid or supported acidic catalysts. Hydrogenation of acetone[edit] Crude acetone is hydrogenated in the liquid phase over Raney nickel or a mixture of copper and chromium oxide to give isopropyl alcohol. This process is useful, when it is coupled with excess acetone production, such as the cumene process. Isopropanol has ideal physical and chemical properties to form a supersaturated layer of vapor which can be condensed by particles of radiation In , 45, metric tonnes of isopropyl alcohol were used in the United States, mostly as a solvent for coatings or for industrial processes. In that year, metric tons were used for household purposes and in personal care products. Isopropyl alcohol is popular in particular for pharmaceutical applications, [15] due to its low toxicity. Some isopropyl alcohol is used as a chemical intermediate. Isopropyl alcohol may be converted to acetone, but the cumene process is more significant. It is also used as a gasoline additive. It also evaporates quickly, leaves nearly zero oil traces, compared to ethanol, and is relatively non-toxic, compared to alternative solvents. Thus, it is used widely as a solvent and as a cleaning fluid, especially for dissolving oils. Together with ethanol, n-butanol, and methanol, it belongs to the group of alcohol solvents, about 6. Intermediate[edit] Isopropyl alcohol is esterified to give isopropyl acetate , another solvent. It reacts with carbon disulfide and sodium hydroxide to give sodium isopropylxanthate , an herbicide [20] and an ore flotation reagent. Water is required to open up membrane pores of bacteria, which acts as a gateway for isopropyl alcohol. Isopropyl alcohol can also be used similarly to ether as a solvent [24] or as an anesthetic by inhaling the fumes or orally. Early uses included using the solvent as general anesthetic for small mammals [25] and rodents by scientists and some veterinarians. However, it was soon discontinued, as many complications arose, including respiratory irritation, internal bleeding, and visual and hearing problems. In rare cases, respiratory failure leading to death in animals was observed. Automotive[edit] Isopropyl alcohol is a major ingredient in "gas dryer" fuel additives. In significant quantities water is a problem in fuel tanks as it separates from the gasoline and can freeze in the supply lines at low temperatures. Alcohol does not remove water from gasoline; rather, the alcohol solubilizes water in gasoline. Once soluble , water does not pose the same risk as insoluble water, as it will no longer accumulate in the supply lines and freeze, but will be consumed along with the fuel itself. Isopropyl alcohol is often sold in aerosol cans as a windshield or door lock deicer. Isopropyl alcohol is also used to remove brake fluid traces from hydraulic braking systems, so that the brake fluid usually DOT 3 , DOT 4 , or mineral oil does not contaminate the brake pads , which would result in poor braking. Laboratory[edit] As a biological specimen preservative, isopropyl alcohol provides a comparatively non-toxic alternative

to formaldehyde and other synthetic preservatives. Isopropyl alcohol is often used in DNA extraction. This is possible because DNA is insoluble in isopropyl alcohol. Safety[edit] Isopropyl alcohol vapor is denser than air and is flammable , with a flammability range of between 2 and It should be kept away from heat and open flame. Symptoms of isopropyl alcohol poisoning include flushing , headache , dizziness , CNS depression , nausea , vomiting , anesthesia , hypothermia , low blood pressure , shock , respiratory depression , and coma. Furthermore, there is no indication for the use of fomepizole , an alcohol dehydrogenase inhibitor, unless co-ingestion with methanol or ethylene glycol is suspected. Designations such as isopropanol, sec-butanol, and tert-butanol are incorrect because there are no hydrocarbons isopropane, sec-butane, and tert-butane to which the suffix "-ol" can be added; such names should be abandoned. Isopropyl alcohol, sec-butyl alcohol, and tert-butyl alcohol are, however, permissible see Rule C The Royal Society of Chemistry. The nucleophilicities and competitive reactivities of alkoxides and phenoxides".

Chapter 2 : On the higher order product density functions of a Neymanâ€“Scott cluster point process

Point processes are random processes that are concerned with point events occurring in space or time. This book is suitable for those working in the conventional areas of statistical physics, fluctuating phenomena and communication theory and control, where point processes are extensively employed.

Chapter 3 : Central Limit Theorems for Empirical Product Densities of Stationary Point Processes - CORE

Estimators of the product density and the pair correlation function Let N be a planar stationary and isotropic second order point process of intensity A.

Chapter 4 : Isopropyl alcohol - Wikipedia

A general formula and upper bounds for the intensity-reweighted product density functions of Neyman-Scott processes are obtained. Analytical expressions are presented for the intensity-reweighted product and cumulant densities of the Thomas process, an important special case of Neyman-Scott processes.

Chapter 5 : Central limit theorems for empirical product densities of stationary point processes - CORE

point process theory have been published, mainly concerning so-called summary statistics such as Ripley's K-function, the nearest-neighbor distance distribution function, the empty-space function, and other functions based on these characteristics such as the L- or the J-function.

Chapter 6 : Sulfuric acid - Wikipedia

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