THE ROLE OF KIRCHOFF'S VOLTAGE LAW IN NETWORKS

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Abstract

KVL is mostly taught for a single loop , like that only we study load balancing in wireless networks with a single class of traffic, focusing our attention on an important example, i.e., Wireless Sensor Networks. This paper simplify the working of KVL in day to day life with the main aim of analyzing Wireless Minimum Cost Problem. Its operation may be viewed as trying to satisfy Kirchhoff's Voltage Law on an electric circuit containing inner resistor. when the traffic is elastic, the algorithm can be easily modified to also perform congestion control.

KEYWORDS: Kirchhoff's Voltage Law, Load Balancing Wireless Sensor.

INTRODUCTION

Gustav Kirchhoff's Voltage Law is the second of his fundamental laws we can use for circuit analysis. Above defined voltage law states that, for a closed loop series path the algebraic sum of all the voltages around any closed loop in a circuit is equal to zero. This is because a circuit loop is a closed conducting path so no energy is lost, like that only, We study wireless networks and nodes communicating with each over a shared wireless medium, in which data is shared or collectively stored or created. This research paper is basically about all the wireless networks, its nodes, algorithms which basically be created or being set up by using KVL internally or externally.

LITERATURE REVIEW

Congestion Control and Load Balancing

The current distribution in various branches of a circuit can easily be found out by applying Kirchhoff Current law at different nodes or junction points in the circuit, like that also we apply KVL for detecting congestion, either by monitoring or by viewing channels, or both. Occasionally, congestion information is shared with neighboring nodes and upon that actions are taken. Works in this field typically do not take into account the interference exhibited by the wireless channel, which should influence the choice of routes. In addition, the loading and choosing the routes i.e. either by mesh or loop, well find solution for the upcoming balancing

WIRELESS MAXIMIZATION UTILITY

By the help of KVL during finding the maximization power between loops and networks. The interconnected networks with different data types and rates requirements and capabilities are defined .The application of network utility maximization has been a great optimization tool for complex wired network .There are many complex networks which are there yet to be solved by kvl .There are logical sources and destinations pairs for linked or linked to be networks , The flow of information through the networks for a logical source over multiple links and , this implies that the fading can be inverted via power control or that the network will experience outages when channel conditions fall below those necessary to support this fixed transmission rate. Such outages reduce through put and increase average delay.

UNBALANCED VOLTAGE

A common requirement of a distributive system is to serve a combination of single or looped phase systems , if voltage are unbalanced then depending on the degree of unbalancing the system would be overheated or start functioning slow , sources are unbalanced would be unequal spacing or traffic between data handling and its applications .

IMPLEMENTATION

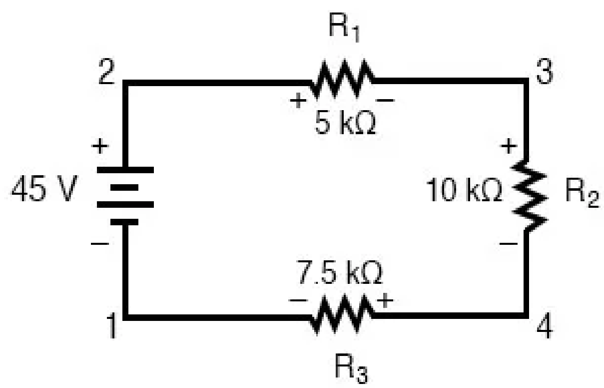
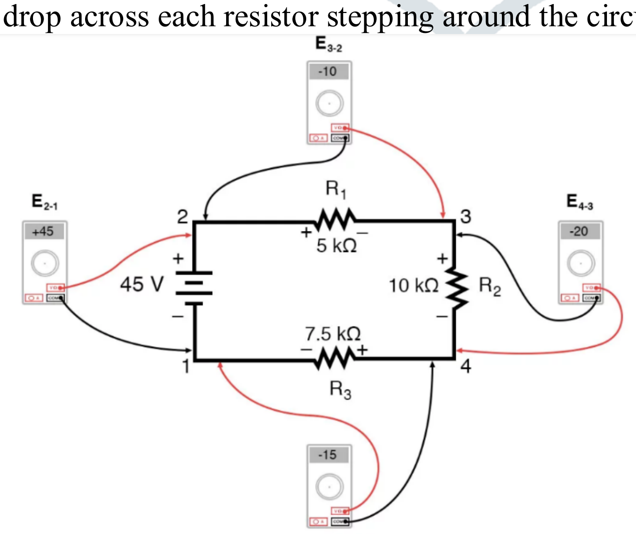


FIG 1:SIMPLE CIRCUIT WITH THREE RESISTOR

As implementation of the above discussed voltage law, this is a small example which explain the voltage distribution in series circuit. So, meter would resist 45+ volts, there would be a black and red test. Voltage drop across each resistor stepping around the circuit if in clockwise then red test otherwise



black test.

FIG 2: COMPLETE CIRCUIT

As you can see by the simple example that it doesn't mean from where you start calculating sum of voltage will be equal to zero.

From point: 2 to 1 = 45
3 to 2 =-10
4 to 3 = -20
4to 1 =-15

i.e. sum in the end is zero. Apart from these Kirchhoff's voltage law can be used to determine the major as well as minor complex circuits where loop or loop of loops are connected in both series and parallel.

OBSERVATIONS

The basics aim is to illustrate the usefulness of method and provide a proof of concept, rather than a comprehensive evaluation of the proposed process , it can be easily seen that it doesn't mean whether we are solving question of parallel or series combination in different network setup or startup in the end voltage sum be zero or it can be as minimum as can.

DISCUSSION

Using just the precept of a thought experiment and the notion of Gustav Kirchhoff correspondence, we have determined a simple, but effective, model to explain uses of voltage law in circuit diagram as well as in networking. He would have been proud! Not only do the results make conceptual sense, but in the limit, they become the solution of some issues that people are facing. What is more, we developed all of the concepts with very simple algebra, at a mathematical level appropriate to introductory college students and advanced high school students. If the instructor wished to extend the results herein presented, she could certainly consider the situation in terms of the relativistic acceleration function. Such a derivation would certainly demand much more mathematical sophistication from the student, but would require far fewer assumptions, and may, in that respect, actually be clearer to a mathematically prepared student.

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