



Sudan University of Science and Technology



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The effect of x-ray on some electrical components

تأثير الاشعة السينية علي بعض المكونات الكهربائية

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(M. Sc.) in physics

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Dedication

All praise to Allah, today we fold the days' tiredness and the errand summing up between the cover of this humble work. To the spring that never stops giving, to my mother. To whom he strives to bless comfort to my dearest father. To whose love flows in my veins and my heart always remembers them, to my brothers and sisters. To those who taught us letters of gold and words of jewel of the utmost and sweetest sentences in the whole knowledge. Who reworded to us their knowledge simply and from their thoughts made a lighthouse guides us through the knowledge and success path, to our honored teachers and professors.

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Abstract

The effects of x-ray on electronic component such as resistors and capacitors have been studied in this work which revealed in damage of these components. In this research different types of resistors and capacitors with different magnitude (1770 and 56 ohm) and light resistor, and (10 and 1000 μF) exposure to an x-ray radiation with energy 35KV / 1mA. The study divided to three parts, the first part study that components before irradiation, second part after 10 second, and third part after 30 minutes. It is found that the impedance and capacitance decrease by increasing the time of exposure.

ملخص البحث

تم دراسة تأثير الأشعة السينية علي المكونات اللاكترونية مثل المقاومات والمكثفات ، حيث استخدمت مقاومات ذو قيم مختلفة (1770 و 56) اوم ومقاومه ضوئية ومكثفات (10 و 1000) مايكروفاراد، حيث سلطت عليها اشعة سينية بطاقه (35 ك.ف/ 1 ملي امبير)، و تمت الدراسة على ثلاثة اجزاء الجزء الاول دُرست خصائص تلك المواد الكهربية قبل عملية الاشعاع و الجزء الثاني تم تعرضه لمدة 10 ثواني للاشعاع و درست الخصائص مرة اخرى ، و فى المرحلة الثالثة تم تعريض المكونات للاشعاع لمدة 30 دقيقة وتم درست الخصائص ، و وجد أن المعاوقة والمحاثة السعوية تزيد بزيادة زمن التعرض للاشعاع و هذا يؤدي الى تلف المكونات.

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