Slide 1: Introduction

Slide 2: The Problem we are trying to solve

Slide 3: SRE – Explain the Monte Carlo method. One special kind of Monte Carlo Simulation Method - SRE

Slide 4: What is special about the monte Carlo method, we trace the electric field upon each scattering event

Slide 5: The SRE can be described in matrix form where E is the electric field, S is the scattering matrix dependent on the scattering angle between the incoming propagation direction and outgoing propagation direction, R is the rotation matrix between the incoming and outgoing perpendicular electric fields.

Slide 6: Add an introduction to coherent backscattering enhancement We are interested in one special phenomena CBS Phenomena – Why CBS… Talk about it

Slide 7: Explain about coherent backscattering – from a turbulent medium - when light comes in from a laser, can take two different passes – forward and reverse – when they emerge they can constructively interfere with each other, intensity becomes larger

Slide 8: Use the figure to explain CBS – scatters when it hits, what the r’s are. Which is the scatterer. S’s are the path or rather the distance traveled between point of event of scattering and the next event. Or in the beginning entry to scatter and scatter to exit.

Slide 9: When the medium contains a glucose – and we overlay a magnetic field onto it, the light ray will experience a Faraday rotation due to the magnetic field – chiro molecule glucose - when light passes it will experience additional rotation of the electric field when propagating inside medium

The true Verdict constant is not clear since a study would have to be carried out

Faraday Rotation Angle for typical healthy person versus diabetic

Slide 10: Slide shows how we use EMC to describe CBS. Propagates through medium. N is a scatter, particles. Describe scatterers and what they are. When they exit they interfere which causes CBS

Slide 11: Purpose of the slide – Shows how glucose molecule – magnetic field will modify the light propagation in the medium. Presents glucose molecules, introduces Faraday in the medium. Light experiences Faraday in medium because of magnetic field and glucose in the medium.

Delta is the angle of Faraday rotation – In our case half times VB\* d

Rotation R will have additional P rotation

Slide 12: Show changes in the formula with the previous equations

Slide 13: Shows the introduction of Faraday rotation in the code.

Slide 14: Explain the function of the code

Slide 15: Here is a small piece of my code, which shows how we calculate the P, to incorporate P \* R. Into the original R rotation.

Slide 16: x-axis is the angle of faraday rotation, y-axis enhancement factor, factor goes down, when the B field increased, or angle increased – able to figure out - fix figure

Slide 17: What I have learned so far…

Slide 18: Steps to finish…