

THE DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING SPEAKER SERIES

PRESENTS

Triaxial Electromagnetic Induction Well Logging Instrument Rt Scanner: Physics and Validation



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Monday, 9/9, 9:55am

Room W122, Engineering Building 2

LECTURE ABSTRACT

Presented is a body of work, which investigated the response of a multiple-spacing triaxial array (Rt Scanner) tool with a multiple electrode type sleeve to a homogeneous medium and to eccentricity within a borehole in a homogeneous medium. The sleeve electrodes were placed symmetrically about the transmitter and the furthest receiver, while between each receiver pair an electrode was placed near the harmonic mean. The electrodes were small in vertical extent and broken into four azimuthal quadrants. Each quadrant was further made up of fingered metallic strips connected at one end, where no finger dimension was allowed to be thicker than a skin depth. That is, the sleeve was electro-magnetically transparent. The tool response was measured in a 23,000-gallon tank filled with salt water with different conductivities. Conductive plastic tubes made of TIVARTM, filled with different conductivity fluids, were used to measure borehole response. The tool and formation were modeled with SLDMCYL1.6. The comparison between measurement and theory is quantitative. Lastly, we will review the latest answer products inverting for apparent resistivity and dielectric.

SPEAKER BIOSKETCH

Dean M. Homan is an Advisor Research Scientist at Schlumberger Houston Formation Evaluation Center, and has worked on triaxial antenna development, induction array design, tool calibration and resistivity environmental corrections since 1999. Dean is an author of 41 papers and holder of 47 patents. He was awarded the SPWLA Distinguished Technical Achievement Award in 2013 for significant contributions in electromagnetic logging. He was cited SPWLA Best Paper/Presentation in 2016 for his contribution to the EMLA tool development. Before joining Schlumberger, he worked as a post doctorate at Rice University, developing the degenerate Fermi gas experiment. He has a BS degree in physics and mathematics from University of Nebraska, Lincoln and has a PhD in atomic experimental/theoretical physics from the University of Kentucky.

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