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### **How a Physicist Can Add Value In the Oil and Gas Industry**

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The talk will focus on some specific examples of innovative and fit-for-purpose physics applied to solve real-world oil and gas exploration and production problems. In addition, links will be made to some of the skills and areas of practical experience acquired in physics education and research that can prove invaluable for success in such an industrial setting with a rather distinct and unique culture and a highly-collaborative working style. The oil and gas industry is one of the largest and most geographically and organizationally diverse areas of business activity on earth; and as a ‘mature industry,’ it is also characterized by a bewildering mix of technologies dating from the 19th century to the 21st. Oil well construction represents one of the largest volume markets for steel tubulars, Portland cement, and high-quality sand. On the other hand, 3D seismic data processing, shaped-charge perforating, and nuclear well logging have consistently driven forward the state of the art in their respective areas of applied science, as much or more so than defense or other industries. Moreover, a surprising number of physicists have made their careers in the oil industry. To be successful at introducing new technology requires understanding which problems most need to be solved. The most exotic or improbable technologies can take off in this industry if they honestly offer the best solution to a real problem that is costing millions of dollars in risk or inefficiency. On the other hand, any cheaper or simpler solution that performs as well would prevail, no matter how inelegant! The speaker started out in atomic spectroscopy (Harvard), post-doc’ed in laser cooling and trapping of ions for high-accuracy time and frequency metrology (NIST), and then jumped directly into Drilling Engineering with Schlumberger Corp. in Houston. Since then, his career has moved through applied electromagnetics, geological imaging, nuclear magnetic resonance logging, some R and D portfolio management, and more recently, management of applied physics research for evaluating reservoir rocks and fluids and enhancing the productivity of reservoirs.