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## Development of Magnetic Resonance Imaging Method for Computational Neuro-oncology

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**Introduction:** Neuro-oncology is the study of brain and spinal cord neoplasms, many of which are life threatening. Brain imaging relying almost exclusively on MRI has been impressive in detecting early abnormalities in the brain, tumor types and grade. However, extremely small neoplasms (at early stages) are very difficult to detect. In addition to this, interpretation of disease response and progression in comparison to actual effects of tumor treatment has been quite poor. In order to address this problem, we have developed a computational method for differentiating normal brain tissues from abnormalities.

**Results:** A wolfram Mathematica program is developed according to Eqn(2) with which experimentally determined T1,T2 could be used for obtaining My maps. The GUI is shown in Fig.1 while the results for several brain tissues are shown in Fig.2.

**Conclusion:** The computer program was able to show contrasts between normal/abnormal brain tissues when the sizes are just few microns. This is particularly important in not only tumor diagnosis but also monitoring of patient response after treatment. Another advantage of this study is that diagnosis/treatment monitoring could be done without risking health deterioration due constant administration of chemotherapeutic drugs; ie, the simulation could be run as many times as required until best treatment plans are decided based on the results.

### Biography

Awojoyogbe O. Bamidele has B.Sc (1986), M.Sc (1991) and obtained Ph.D (1997) from Federal University of Technology, Minna, Nigeria in collaboration with the Institute of Biomedical Engineering and Medical Informatics, University and ETH, Zurich, Switzerland. He won the 2003 Young African Mathematician Medal Award by African Mathematical Union at AMU-ICMS. He has published more than 50 papers in reputed journals and has served at various academic and administrative levels within the university.

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