João Magueijo e a Física da Inconstância

João Magueijo (JM) é um cosmólogo com largo reconhecimento internacional, antigo aluno Faculdade de Ciências da Universidade de Lisboa (FCUL), onde concluiu a licenciatura em Física. Actualmente, é professor de Física Teórica no Imperial College da Universidade de Londres, depois de ter passado pela Universidade de Cambridge (St. John's College) onde fez o seu doutoramento (Trinity College).

Nos últimos anos atingiu uma maior notoriedade, que se tem traduzido numa presença frequente nos órgãos de comunicação, na sequência de vários trabalhos publicados em colaboração com alguns reconhecidos cosmólogos (Andreas Albrecht e John Barrow) ou isoladamente, nos quais desenvolve um quadro alternativo para resolver os famosos enigmas do modelo de Big Bang do Universo. Na perspectiva deste modelo, a grande uniformidade do Universo (a sua homogeneidade e isotropia, bem como as flutuações de densidade que estão na origem da formação de galáxias, eram assumidas como "condições iniciais" da teoria, sem nenhuma explicação aparente. Até há bem pouco tempo, todas as tentativas de ultrapassar este quadro e oferecer uma explicação com base em processos físicos calculáveis passavam por um Cenário Inflacionário no qual o Universo sofria um período de expansão acelerada, produzida por um campo enigmático conhecido pelo "inflatão". O mecanismo deste campo traduzia-se numa modificação do conteúdo material do Universo de tal modo que a gravidade ordinária de Einstein se tornava repulsiva e provocava uma fase de expansão "superluminal" do Universo.

JM e seus colaboradores interrogavam-se se seria a inflação a *verdadeira* solução para os enigmas do Big Bang. E numa tentativa de enriquecer o debate, avançaram outra alternativa à cosmologia inflacionária: em vez de alterar o conteúdo material do Universo, optaram por admitir uma velocidade da luz muito mais elevada no Universo primitivo, seguida de uma desaceleração para o seu valor actual. Com isto, conseguiram desenvolver um novo cenário onde grande parte dos referidos enigmas era resolvida. Porém esta alteração, a princípio admitida como uma simples hipótese de trabalho, não é aceite pela comunidade científica por entrar em conflito com a física actual, pois colide com um dos Postulados da Teoria da Relatividade Restrita de Einstein, o postulado da invariância da velocidade da luz no vácuo, c. Desde então, c é considerada como uma das constantes universais da física. Assim, a hipótese de JM e seus colaboradores vem

chocar com um dos princípios sacrossantos da física moderna. É claro que JM tem perfeita consciência desta dificuldade, e por isso mesmo tem procurado ultimamente construir um quadro fisicamente razoável para desenvolver as teorias da velocidade da luz variável, que tem repercussões praticamente em toda a física actual. Daí a grande importância das investigações deste físico português a trabalhar no Reino Unido. Só o futuro dirá se estas teorias serão levadas a bom porto, apesar das naturais reticências levantadas por muitos físicos. Por mim, defendo que todos temos a ganhar com o enriquecimento de um debate que vai com certeza proporcionar uma melhor fundamentação das teorias físicas. Mas será que esta via tornará mais viável uma teoria quântica da gravitação? Ou será antes o caso que estes dois belos edifícios construídos no século XX permanecerão definitivamente separados, como alguns sugerem?

Lisboa, 8 de Janeiro de 2007

Paulo Crawford

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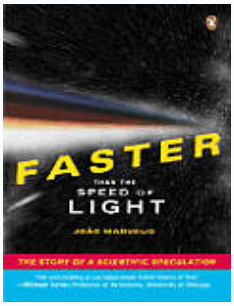

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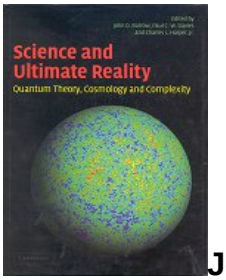

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Contribuição:

- Joao Magueijo.
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