World Academy of Science, Engineering and Technology
International Journal of Physical and Mathematical Sciences
Vol:8, No:12, 2014

Spin One Hawking Radiation from Dirty Black Holes

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Abstract : A 'clean' black hole is a black hole in vacuum such as the Schwarzschild black hole. However in real physical systems, there are matter fields around a black hole. Such a black hole is called a 'dirty black hole'. In this paper, The effect of matter fields on the black hole and the greybody factor is investigated. The results show that matter fields make a black hole smaller. They can increase the potential energy to a black hole to obstruct Hawking radiation to propagate. This causes the greybody factor of a dirty black hole to be less than that of a clean black hole.

Keywords : dirty black hole, greybody factor, hawking radiation, matter fields.
Conference Title : ICMTP 2014 : International Conference on Mathematical and Theoretical Physics
Conference Location : Penang, Malaysia
Conference Dates : December 16-17, 2014