1042-11-200   **Susil Kumar Jena*** (`susil_kumar@yahoo.co.uk`), Dept. of Electronics and Telecom. Engineering, KIIT University, Bhubaneswar, Orissa 751024, India. *THE DIOPHANTINE EQUATION $A^4 + B^4 + C^4 = 2D^n$ AND BEYOND.*

The Diophantine equation $A^4 + B^4 + C^4 = 2D^n$ has solutions in integers for (A,D,C,D) when n is 2, 4 or twice of an odd positive integer. This result is got from a Diophantine identity relating to the Diophantine equation $A^4 + B^4 + C^4 = 2D^2$. Very interesting results are obtained if we include the Gaussian integers for A, B, C and D. In this paper, we will answer if the title equation has finite or infinite number of integral solutions for each of the values that n can take. While producing many new results, we will raise a lot of important questions for further analysis and explore the scope of possible applications for the said equation. (Received August 19, 2008)