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Razvan Gelca* (rgelca@gmail.com), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409. *Finding the basis of the Hilbert space of a certain quantum system.*

We will describe a basis of the Hilbert space of the quantum double of $SU(2)$ -Chern-Simons topological quantum field theory on the torus. This is done using curves on the torus colored by irreducible representations of the quantum group of $SU(2)$. This has an application to quantum computing which we shall also discuss. (Received September 22, 2005)