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(54) **A SPIN HALL ISING MACHINE AND  
METHOD FOR OPERATING SUCH**

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**ABSTRACT**

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The present invention relates to an Ising Machine utilizing a network of spin Hall nano-oscillators (SHNOs) suitable or computational tasks such as optimization problems. The spin Hall nano-oscillator based Ising machine is provided with a tuning nitarranged to effect the characteristics of at least one individual spin Hall nano-oscillators of the array; and a SHNO read-out unit arranged to detect and transfer a state of at least a one individual spin Hall nano-oscillators of the array.

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