

Supporting Information:

Emergence of 2D high-Temperature Nodal-line half-metal in AgN monolayer.

Xin-Yang Li[#], Meng-Han Zhang[#], Miao-Juan Ren^{*}, and Chang-Wen Zhang^{*}

School of Physics and Technology, Institute of Spintronics, University of
Jinan, Jinan, Shandong, 250022, People's Republic of China

* Corresponding author: ss_zhangchw@ujn.edu.cn

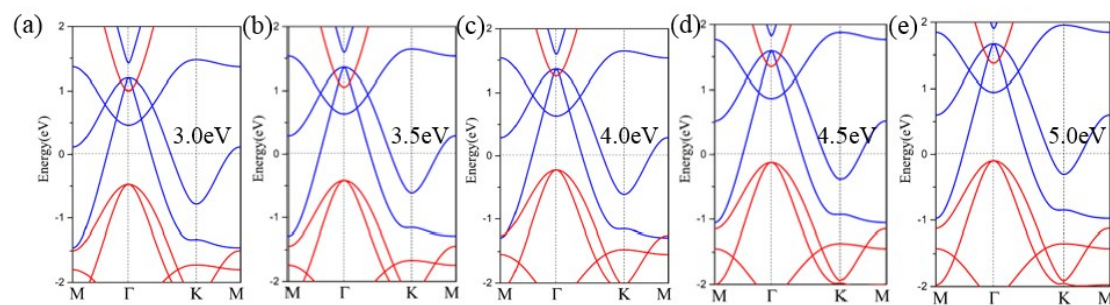


Figure S1. The band structure of AgN with different U values(3.0eV-5.0eV).

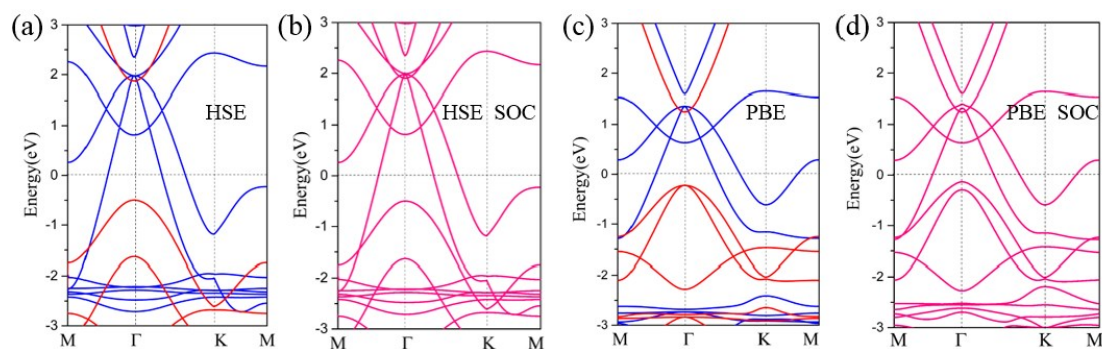


Figure S2. (a) and (b) HSE band structures for the AgN with and without SOC band structures. (c) and (d) PBE+U band structures for AgN with and without SOC.

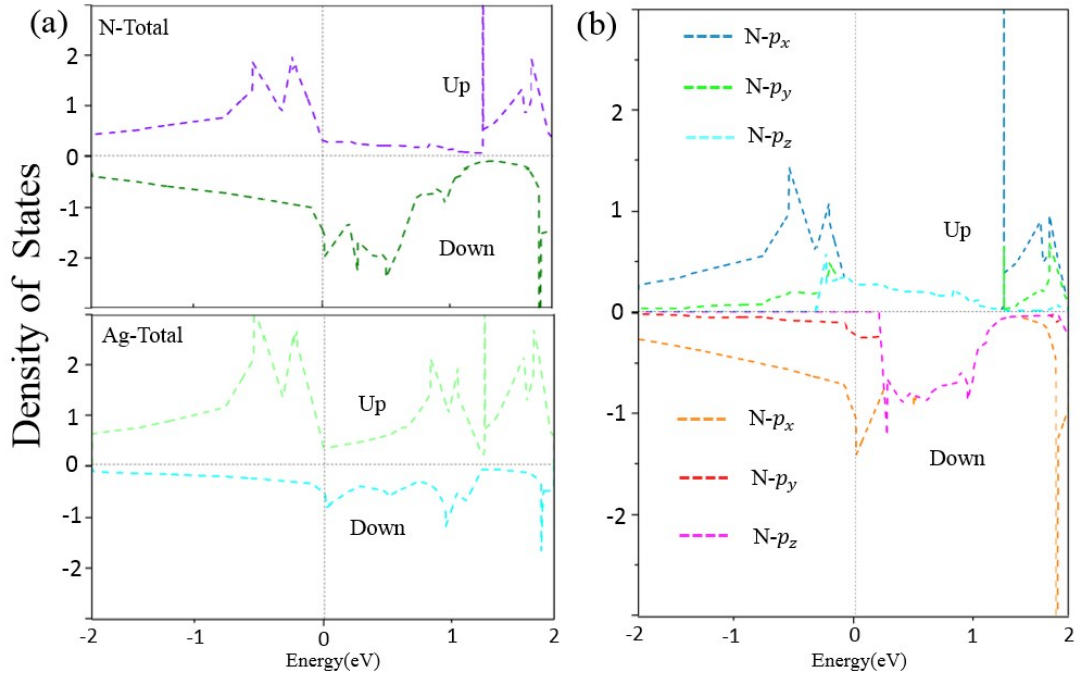


Figure S3. (a) The total and partial densities of states (DOSs) for AgN structure.(b) Partial DOSs without SOC of N atom.

Table S1. A tabulated form (PBE, PBE+SOC, HSE, HSE+SOC) of lattice parameters with and without the SOC.

Calculation method	PBE	PBE+SOC	HSE	HSE+SOC
Lattice constant	4.286(Å)	4.287(Å)	4.284(Å)	4.283(Å)