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Interaction effects of a topological Dirac semimetal Na₃Bi RUIXING ZHANG, The Pennsylvania State University, JIMMY HUTASOIT, Leiden University, CHAOXING LIU, The Pennsylvania State University — We study the interaction effects of a topological Dirac semimetal Na₃Bi based on the mean field theory. The phase diagram can be classified by two kinds of chiral-symmetry-breaking order parameters: nematic orders that break rotational symmetry and charge-density-wave (CDW) order that break translational symmetry. Under strong magnetic field, gapless Landau levels will be formed and result in instabilities due to the above order parameters. These order parameters are generally complex, and are identified as complex mass terms, which introduce axions into the low energy theory. The possible experimental consequence is also studied.

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