Quantum Antiferromagnet on a Hyper-kagome Lattice: Applications to Na$_4$Ir$_2$O$_8$ MICHAEL LAWLER, ARUN PARAMEKANTI, HAE YOUNG KEE, YONG BAEK KIM, University of Toronto, ASHVIN VISHWANATH, University of California, Berkeley — Motivated by the intriguing low temperature paramagnetic behaviour recently observed in the Mott insulator Na$_4$Ir$_2$O$_8$, we study the quantum antiferromagnet Heisenberg model on a hyper-kagome lattice. Employing a large N generalization of the Schwinger boson description of spin systems uniquely suited to frustrated lattices, we find various closely competing phases for the ground state. Implications of our results for Na$_4$Ir$_2$O$_8$ are also discussed.