Theory of dissociative recombination of highly-symmetric poly-atomic ions[1] VIATCHESLAV KOKOOULINE, Department of Physics, University of Central Florida, NICOLAS DOUGUET, ANN E. OREL, Department of CHMS, University of California at Davis, CHRIS H. GREENE, Department of Physics and JILA, University of Colorado at Boulder — A general first-principles theory of dissociative recombination is developed for highly-symmetric molecular ions and applied to H_3O^+ and CH_3^+, which play an important role in astrophysical, combustion, and laboratory plasma environments. The theoretical cross-sections obtained for the dissociative recombination of the two ions are in good agreement with existing experimental data from storage ring experiments.

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