A new *ab initio* potential energy surface for ethylene

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We report a new potential energy surface for ethylene (C_2H_4) which has been calculated using augmented coupled cluster, CCSD(T), methods and correlation consistent basis set cc-pVQZ. The *ab initio* grid consisting of 80000 points has been fitted using a sixth order expansion in curvilinear symmetry-adapted coordinates. Preliminary ro-vibrational calculations using our recent normal-mode reduction-truncation procedure previously applied for methane [1,2] as well as comparisons with previous works for the ethylene calculations [3,4] will be presented. As a prospective, the construction of a dipole moment surface for accurate calculations of line intensities will be briefly discussed.

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