

**EARTH AND VENUS: PLANETARY EVOLUTION AND HABITABILITY.** P. E. Laine<sup>1</sup>, <sup>1</sup>Departments of Physics and Computer Science and Information Systems, P.O. Box 35, FI-40014 University of Jyväskylä, Finland, pauli.e.laine@jyu.fi.

In our Solar System Earth and Venus are very similar at planetary level. Venus has sometimes even named Earth's twin because they both have similar size, density, surface composition and have cloudy atmosphere. There are also some differences between these planets. Venus is about 30% closer the Sun than Earth. Venus has retrograde rotation (opposite to Earth's) of 243 days, longer than its's orbital period, 225 days. The most striking difference is the atmosphere, 90 times more dense than Earth, and it contains 96.5% CO<sub>2</sub>, compared to 0.04% on Earth. These planets' orbits are within the habitable zone (for the existence of liquid water). What caused these two planets to evolve very differently? Could Venus have evolved to more Earth-like state? Could Earth end up to similar state that Venus is today? This presentation will review these important questions in the light of astrobiology and Earth's future.