

# On the $\pi$ -Electron Content of Rings in Benzenoid Parallelograms

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Z. Naturforsch. **66a**, 47 – 52 (2011); received December 4, 2009 / revised May 31, 2010

We make use of the classical correspondence between Kekulé structures and lattice paths to obtain explicit formulas for the Pauling bond order of edges in benzenoid parallelograms. These formulas are further used to establish the average  $\pi$ -electron content of hexagonal rings in such benzenoids. We then compare this quantity with the atom-based  $\pi$ -electron content of rings, and study the local and the asymptotic behaviour of their difference.

*Key words:* Benzenoid Graph; Kekulé Structure;  $\pi$ -Electron Partition;  $\pi$ -Electron Content;  $\pi$ -Electron Excess.