# From Quantum Structures to GMV-algebras and Back

## Anatolij Dvurečenskij

[1] Mathematical Institute, Slovak Academy of Sciences,
Štefánikova 49, SK-814 73 Bratislava, Slovakia
E-mail: `dvurecen@mat.savba.sk`

It is well-known that every orthomodular lattice can be covered by blocks that are Boolean algebras, also every lattice ordered effect algebras can be covered by blocks that are MV-algebras. Hence the importance of MV-algebras for quantum structures is fundamental.

In the present talk we show that similar role can be founded also for pseudo effect algebras. Therefore, we study GMV-algebras, that are intervals in unital $\ell$-groups with strong unit. Using this basic representation theorem we show many important classes of GMV-algebras.

## References

[DDT]   A. Di Nola, A. Dvurečenskij, and C. Tsinakis, *On perfect GMV-algebras,* submitted.

[Dvu1]  A. Dvurečenskij, *Pseudo MV-algebras are intervals in $\ell$-groups*, J. Austral. Math. Soc. Ser. **72** (2002), 427–445.

[Dvu2]  A. Dvurečenskij, *States on pseudo MV-algebras*, Studia Logica, **68** (2001), 301–327.

[DvHo]  A. Dvurečenskij, W.C. Holland, *Top varieties of generalized MV-algebras and unital lattice-ordered groups,* Comm. Algebra, to appear.

[DvPu]  A. Dvurečenskij, S. Pulmannová, *"New Trends in Quantum Structures*, Kluwer Acad. Publ., Dordrecht, and Ister Science, Bratislava, 2000.

[DvVe1]  A. Dvurečenskij, T. Vetterlein, *Pseudoeffect algebras. I. Basic properties,* Inter. J. Theor. Phys. **40** (2001), 685–701.

[DvVe2]  A. Dvurečenskij, T. Vetterlein, *Pseudoeffect algebras. II. Group representation,* Inter. J. Theor. Phys. **40** (2001), 703–726.