1030-20-235   **Kenneth W Johnson*** (`kwj1@psu.edu`), Department of Mathematics, Penn State Abington College, 1600 Woodland Road, Abington, PA 18901, and **Stephen P Humphries**, Department of Mathematics, Brigham Young University, Provo, UT 84602. *Fusions of character tables of groups and association schemes.*

If the character table of a finite group H satisfies certain "magic rectangle" conditions, then the characters and classes can fuse to the character table of a group G of the same order. The case where H is abelian is investigated and the theory is developed in terms of the S-rings of Schur and Wielandt. We discuss certain classes of p-groups which fuse from abelian groups and give examples of such groups which do not. We also show that a large class of simple groups do not fuse from abelian groups. There are many open questions such as whether the groups which fuse from abelian groups form a variety. Some new techniques for S-rings are developed. It is possible to ask related questions such as: which association schemes have character tables which fuse from those of abelian groups? Our techniques may be relevant to work on circulant graphs. (Received August 03, 2007)