GENERALIZING BOHR'S EQUIVALENCE THEOREM

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Abstract. 100 years ago Bohr [1] defined an equivalence relation on a set of generalized Dirichlet series and showed that equivalent Dirichlet series assume the same values on every right half-plane where they are absolutely convergent. Recently we showed [2] that also a converse is true: if two Dirichlet series have the same set of values on every right half-plane where they are absolutely convergent, then they are equivalent according to Bohr's definition. However a simple counterexample shows that the converse theorem doesn't hold in Bohr's general setting. To overcome this issue Sepulcre and Vidal [3] defined a new equivalence relation which works with almost periodic functions and for which an equivalence theorem holds (see [4]). With this definition we are able to get the converse of the equivalence theorem in Bohr's setting, and also allowing the series to be only uniformly convergent. This is joint ongoing work with J.M. Sepulcre and T. Vidal.

References

[1] H. Bohr, *Zur Theorie der allgemeinen Dirichletschen Reihen*. Math. Ann. **79** (1918), 136–156.
[2] M. Righetti, *On Bohr's equivalence theorem*. J. Math. Anal. Appl., **445** (1) (2017), 650–654. corrigendum ibid. **449** (2017), 939-940.
[3] J.M. Sepulcre, T. Vidal, *Almost Periodic Functions in terms of Bohr's Equivalence Relation*, Ramanujan J., DOI: 10.1007/s11139-017-9950-1, 2017. Corrigendum sent to the journal. See also *arXiv: 1801.08035*.
[4] J.M. Sepulcre, T. Vidal, *Sets of values of equivalent almost periodic functions*, arXiv:1801.08864, (2018).