

## POLYNOMIALS OF MULTIPARTITIONAL TYPE AND INVERSE RELATIONS

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### Abstract

Chou, Hsu and Shiue gave some applications of Faà di Bruno's formula to characterize inverse relations. Our aim is to develop some inverse relations connected to the multipartitional type polynomials involving to binomial type sequences.

**Keywords:** Bell polynomials, inverses relations, polynomials of multipartitional type, binomial type sequences.

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### REFERENCES

- [1] H. Belbachir, S. Bouroubi and A. Khelladi, *Connection between ordinary multino-  
mials, generalized Fibonacci numbers, partial Bell partition polynomials and con-  
volution powers of discrete uniform distribution*, Ann. Math. Inform. **35** (2008),  
21–30.
- [2] H. Belbachir, *Determining the mode for convolution powers of discrete uniform dis-  
tribution*, Probability in the Engineering and Informational Sciences **25** (2011), 469–  
475. doi:10.1017/S0269964811000131
- [3] E.T. Bell, *Exponential polynomials*, Ann. Math. **35** (1934), 258–277. doi:10.2307/  
1968431

- [4] W.S. Chou, L.C. Hsu and P.J.S. Shiue, *Application of Faà di Bruno's formula in characterization of inverse relations*, J. Comput. Appl. Math. **190** (2006), 151–169. doi:10.1016/j.cam.2004.12.041
- [5] L. Comtet, Advanced Combinatorics (Dordrecht, Netherlands, Reidel, 1974). doi:10.1007/978-94-010-2196-8
- [6] M. Mihoubi, *Bell polynomials and binomial type sequences*, Discrete Math. **308** (2008), 2450–2459. doi:10.1016/j.disc.2007.05.010
- [7] M. Mihoubi, *Bell polynomials and inverse relations*, J. Integer Seq. **13** (2010), Article 10.4.5.
- [8] M. Mihoubi, *The role of binomial type sequences in determination identities for Bell polynomials*, to appear in Ars Combin., Preprint available at online: <http://arxiv.org/abs/0806.3468v1>.
- [9] J. Riordan, Combinatorial Identities (Huntington, New York, 1979).
- [10] S. Roman, The Umbral Calculus (New York: Academic Press, 1984).

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