

# Accepted Manuscript

Symbolic computation of some power-trigonometric series

Mohammad Masjed-Jamei, Wolfram Koepf

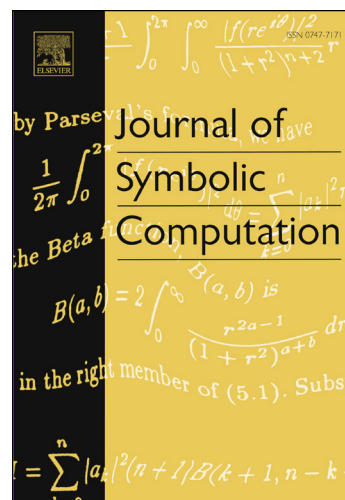
PII: S0747-7171(16)30004-9  
DOI: <http://dx.doi.org/10.1016/j.jsc.2016.03.004>  
Reference: YJSCO 1679

To appear in: *Journal of Symbolic Computation*

Received date: 30 September 2015  
Accepted date: 2 March 2016

Please cite this article in press as: Masjed-Jamei, M., Koepf, W. Symbolic computation of some power-trigonometric series. *J. Symb. Comput.* (2016), <http://dx.doi.org/10.1016/j.jsc.2016.03.004>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# Symbolic Computation of Some Power-Trigonometric Series

Mohammad Masjed-Jamei

*Department of Mathematics, K.N.Toosi University of Technology, P.O.Box 16315-1618, Tehran, Iran.*

Wolfram Koepf

*Department of Mathematics, University of Kassel, Heinrich-Plett-Str. 40, D-34132 Kassel, Germany.*

---

## Abstract

Let  $f^*(z) = \sum_{j=0}^{\infty} a_j^* z^j$  be a convergent series in which  $\{a_j^*\}_{j=0}^{\infty}$  are known real numbers. In this paper, by referring to Osler's lemma [8], we obtain explicit forms of the two bivariate series

$$\sum_{j=0}^{\infty} a_{n-j+m}^* r^j \cos(\alpha + j)\theta \quad \text{and} \quad \sum_{j=0}^{\infty} a_{n-j+m}^* r^j \sin(\alpha + j)\theta,$$

where  $r, \theta$  are real variables,  $\alpha \in \mathbb{R}$ ,  $n \in \mathbb{N}$  and  $m \in \{0, 1, \dots, n-1\}$ . With some illustrative examples, we also show how to obtain the explicit form of a trigonometric series when  $f^*(z)$  is explicitly given. Three new integral formulae are derived in this direction.

*Key words:* Bivariate series of power-trigonometric type, trigonometric series, power series, convergence radius.

---

## 1. Introduction

Let

$$f^*(z) = \sum_{j=0}^{\infty} a_j^* z^j, \tag{1}$$

---

*Email addresses:* mmjamei@kntu.ac.ir, mmjamei@yahoo.com (Mohammad Masjed-Jamei), koepf@mathematik.uni-kassel.de (Wolfram Koepf).

Download English Version:

<https://daneshyari.com/en/article/4945959>

Download Persian Version:

<https://daneshyari.com/article/4945959>

[Daneshyari.com](https://daneshyari.com)