Title (en)
SEGMENTED COMPLEX DIFFRACTION GRATINGS

Title (de)
SEGMENTIERTE KOMPLEXE STREUGITTER

Title (fr)
GRILLES DE DIFFRACTION COMPLEXES FRAGMENTEES

Publication
**EP 1073919 A4 20050518 (EN)**

Application
**EP 99918461 A 19990423**

Priority
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- US 11533198 A 19980714

Abstract (en)
[origin: WO9956159A1] Methods and apparatus are disclosed that apply a predetermined complex-valued spectral transfer function to an input optical field to produce an output field that propagates in an output direction. Methods for making such apparatus are also disclosed. Segmented gratings (1915, 1916, 19a15, 19a16) fabricated according to one example comprise a series of spatially distinct subgratings arrayed end to end. Each subgrating possesses a periodic array of diffraction structures, such as lines or other elements. The transfer functions of such segmented gratings are determined by controlling (a) the spatial periodicity or frequency of each subgrating, (b) the amplitude of each subgrating, (c) the spacing between the last diffraction structure (or line) on each subgrating and the first diffraction structure (or line) of the successive subgrating, and (d) the optical path length and transparency through each subgrating, or each subgrating plus additional material layers utilized to control optical path length and transparency. Communication systems using such segmented gratings are also provided.

IPC 1-7
**G02B 5/18**; G02B 6/293; H04J 13/02

IPC 8 full level
**G02B 5/18** (2006.01); **G02B 6/34** (2006.01); **G02B 27/44** (2006.01); **G06K 9/74** (2006.01); **H04B 10/00** (2013.01); **H04B 10/02** (2006.01); **H04B 10/28** (2006.01); **H04B 10/40** (2013.01); **H04B 10/43** (2013.01); **H04B 10/50** (2013.01); **H04B 10/60** (2013.01); **H04J 14/00** (2006.01); **H04J 14/04** (2006.01); **H04J 14/06** (2006.01)

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**G02B 5/1814** (2013.01 - EP); **G02B 6/29311** (2013.01 - EP US); **H04J 14/005** (2013.01 - EP); G02B 6/02085 (2013.01 - EP)

Citation (search report)
- [X] US 5315423 A 19940524 - HONG JOHN H [US]
- [X] US 5654540 A 19970805 - STANTON STUART [US], et al
- [X] US 5204524 A 19930420 - ICHIKAWA SOUJI [US], et al
- [X] FATHALLAH H ET AL: "Analysis of an optical frequency-hop encoder with strain-tuned Bragg gratings", BRAGG GRATING, PHOTOSENSITIVITY, AND POLING IN GLASS FIBERS AND WAVEGUIDES: APPLICATIONS AND FUNDAMENTALS. TECHNICAL DIGEST. POSTCONFERENCE EDITION OPT. SOC. AMERICA WASHINGTON, DC, USA, 26 October 1997 (1997-10-26) - 28 October 1997 (1997-10-28), pages 200 - 202, XP002321675, ISBN: 1-55752-516-1
- [A] KAMAKURA K ET AL: "Optical CDMA based on frequency-domain encoding enhancement of frequency division multiplexing", COMMUNICATIONS, COMPUTERS AND SIGNAL PROCESSING, 1997. 10 YEARS PACRIM 1987-1997 - NETWORKING THE PACIFIC RIM. 1997 IEEE PACIFIC RIM CONFERENCE ON VICTORIA, BC, CANADA 20-22 AUG. 1997, NEW YORK, NY, USA,IEEE, US, vol. 2, 20 August 1997 (1997-08-20), pages 611 - 614, XP010245050, ISBN: 0-7803-3905-3
- [A] IVERSEN K ET AL: "A basic theory of fiber-optic CDMA", SPREAD SPECTRUM TECHNIQUES AND APPLICATIONS PROCEEDINGS, 1996., IEEE 4TH INTERNATIONAL SYMPOSIUM ON MAINZ, GERMANY 22-25 SEPT. 1996, NEW YORK, NY, USA,IEEE, US, vol. 1, 22 September 1996 (1996-09-22), pages 431 - 437, XP010208606, ISBN: 0-7803-3567-8
- [A] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 07 31 July 1997 (1997-07-31)
- See references of WO 9956159A1

Cited by
CN110622059A

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