A Comperision of Pb for CDMA-SDMA Method for Smart Arial System
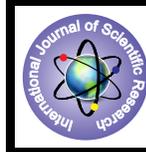
Engineering

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ABSTRACT

This comparison of average Bit Error Rate (BER) of SDMA and CDMA technique and the different ways in which SDMA can be introduced to boost the capacity of a cellular arrangement. The probability of error is found for a standard omni directional base station antenna, and another set of curves is found for flat top beam having a directivity of 5.1dB. It is assumed that k separate flat top beams can be formed by base station and pointed each of the k users within the cell of interest. The use of an adaptive antenna array at the base station thus allows introducing the SDMA technique, whose main benefit is the capability to boost arrangement capacity, i.e. the number of users it can handle

INTRODUCTION

In versatile correspondence courses of action, limit and execution are typically constrained by two noteworthy weaknesses They are multipath and co-channel meddling Multipath is a condition which emerges when a transmitted sign experiences reflection from different impediments in the spread environment. This offers ascend to numerous signs landing from diverse headings Since the multipath signs take after distinctive ways, they have distinctive stages when they are touch base at the recipient The outcome is debasement in sign quality when they are joined at the beneficiary because of the stage bungle Co-channel meddling is the meddling between two flags that work at the same rate of return. In cell correspondence the meddling is typically brought on by a sign from an alternate cell involving the same rate of return band Smart recieving wire is a standout amongst the most encouraging advances that will empower a higher limit in remote systems by adequately decreasing multipath and co-channel meddling This is accomplished by centering the radiation just in the wanted heading and changing itself to changing movement conditions or sign situations Savvy recieving wires utilize an arrangement of emanating components orchestrated as an exhibit. The signs from these components are consolidated to frame a mobile or switchable shaft design that takes after the craved client In a Smart reception apparatus plan the exhibits without anyone else are not shrewd, it is the computerized sign handling that makes them brilliant The procedure of consolidating the signs and afterward centering the radiation in a specific bearing is regularly alluded to as advanced bar framing
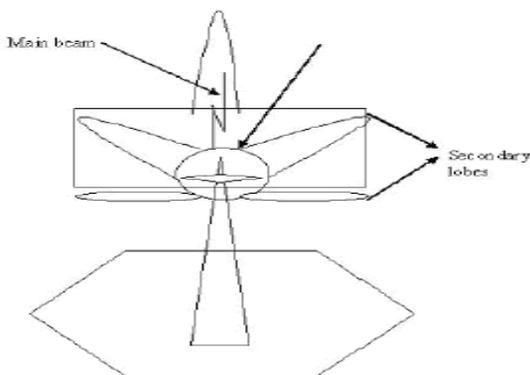

Fig. 1 Radiation Beam Pattern Adapted for a Single User

The use of an adaptive antenna array at the base station thus allows introducing the SDMA technique, whose main benefit is the capability to boost arrangement capacity, i.e. the number of users it can handle

RESULT WITH MATLAB IMITATION

Code Division Multiple Access (CDMA):- For interfering limited CDMA operating is an Additive White Gaussian Noise(AWGN) channel, Pb for a user can be found from the Gaussian approximation as $P_b = Q\left(\sqrt{\frac{3N}{k-1}}\right)$ ……...….……. (1) ;k is the number of user in a cell; N is the spreading factor
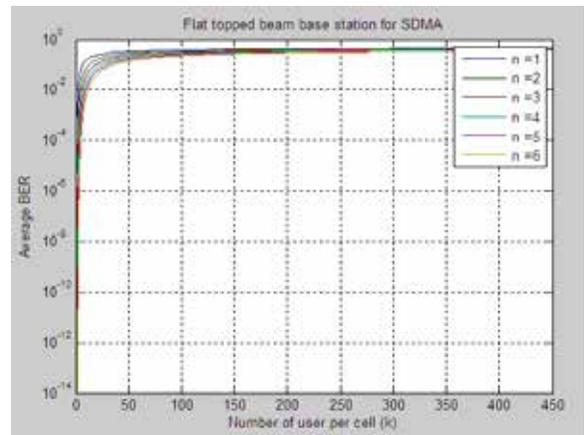

Fig. 2 - No. of user per cell v/s Avg. BER for Omni baseStation for CDMA

Space Division Multiple Access (SDMA):- The average bit error rate for SDMA arrangement is given by $P_b = Q\left(\sqrt{\frac{3DN}{k-1}}\right)$ …… (2)

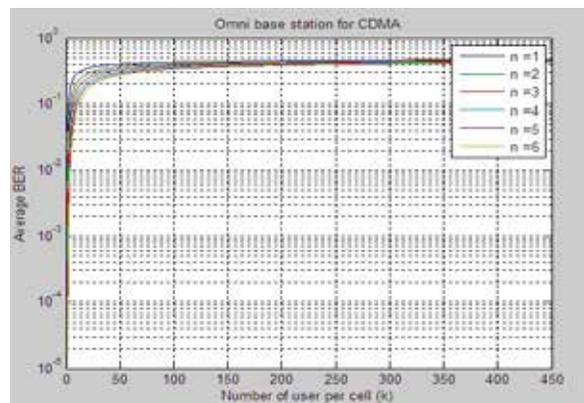;D is the directivity of the antenna

Fig. 3 - No. of user per cell v/s Avg. BER for Flate topped basestation for SDMA

In both Figure 2 and Figure 3 n is path loss exponent and k was

taken as user within the cell of interest, assuming that k=450

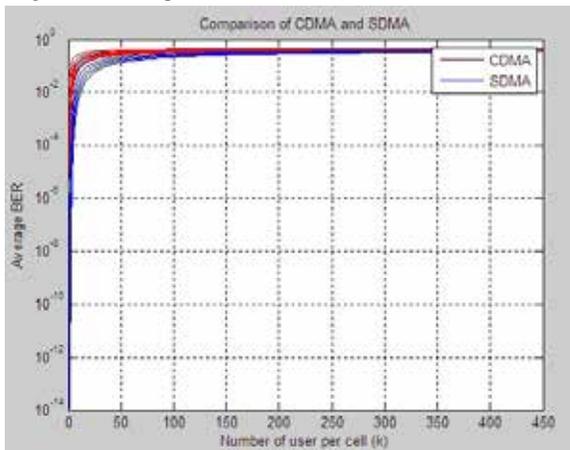In Fig.4, SDMA offered significant capacity gains for a given average BER in comparison with CDMA

Fig. 4 - No. of user per cell v/s Avg. BER – Comparison CDMA & SDMA

CONCLUSION
In Fig 4 one set of Pb is begin for a standardomni directional abject abject antenna, and addition set of curves is begin for collapsed top axle (a axle with connected accretion over a specific region) accepting a directivity of 5.1dB. It is affected that k abstracted collapsed top beams can be formed by abject abject and acicular anniversary of the k users aural the corpuscle of interest. Noticing that for an boilerplate anticipation of absurdity greater than 0.1 in a advancement aisle accident ambiance of n=6, the collapsed top axle will abutment 210-230 users, admitting the omni-directional antenna will abutment alone 55-60 users. SDMA offers for convalescent accommodation in wireless system. Here multipath crumbling is not considered.

REFERENCE

[1] Izz Kadhum Abboud," Increasing Capacity of Users Through The Use Of Smart Base Station Antenna as SDMA Arrangement" Journal of Engineering an d Development, Vol. 16, No.1, March 2012 ,ISSN 1813- 7822 | [2] RK Jain*, Sumit Katiyar and NK Agrawal "SMART ANTENNA FOR CELLULAR MOBILE COMMUNICATION" VSRD-IJEECE, Vol. 1 (9), 2011, 530-541 | [3] A.N. Jadhav ,V. M. Mhalgi, D.D. Khumane ,"Wireless communication using Adaptive Smart Antenna Arrangement" International Journal of Engineering Research & Technology (IJERT) | Vol. 1 Issue 3, May – 2012 , ISSN: 2278-0181 | [4] Harish T.S., T.D. Shashikala, "A NOVEL TECHNIQUE FOR INCREASING USER CAPACITY FOR MOBILE COMMUNICATION BASED ON SMART ANTENNA", International Journal of Advanced Research in Computer Engineering & Technology, ISSN: 2278 – 1323, Volume 1, Issue 3, May 2012 | [5] Prof. B. G. Hogade, Ms. Jyoti Chougale-Patil, Dr.Shrikant K.Bodhe , "ANALYSIS OF IMPROVED AND USUAL LMS BEAMFORMING ALGORITHM FOR SMART ANTENNA" , International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 ,Vol. 2, Issue 3, May-Jun 2012, pp.1816-1820 1816 | [6]Theodore S. Rappaport (2007),"Wireless Communications Principles And Practice"- pp. 621-643,Second Edition,Chapter.9,Person Education |