



## Low energy $K\beta$ X-ray satellites of four intermediate Z atoms

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### Highlights

- This is a study KMMRAE of Ge, As, Se and Br by photon excitation.
- The energy shifts and the integrated relative intensity of KMMRAE are determined.
- The experimental energy shifts agree satisfactorily with theoretical values.
- The integrated relative intensity is slightly underestimated by theory.
- Z dependence of the energy shifts and the integrated relative intensity is examined.

### Abstract

$K\beta$  X-ray spectra of four intermediate Z atoms Ge, As, Se and Br generated by photon excitation are analyzed using a wavelength dispersive spectrometer. The energy shifts and relative intensities of low energy  $K\beta$  X-ray satellites KMMRAE lines are measured and compared with theoretical estimates wherever available. Supplementing the present results with the reported data, their dependence on atomic number is examined.



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### Keywords

KMMRAE; WDXRF

# Mobile Numbers Echo System & Cooling Exchange Solution addressing the challenges of Recycled Mobile Numbers

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**Abstract:** Increased penetration/adoption of mobile telephone services, usage of smart devices, having multiple mobile numbers by a single customer has created a huge demand of mobile connections, but unable to meet the supply of enough new numbering resources as per demand leading to re-use of permanently disconnected mobile phone numbers (**Recycling**) to acquire new customers by Telecom service providers. Being mobile number is crucial data informatics in the on-going business systems/market, the practice of Recycling of mobile numbers left with inconveniences to the present & previous user of that number and business firms (on-line or off-line) who uses the mobile number as a reference. To overcome the difficulties raised due to recycled mobile numbers, in this article, a broad study made on the mobile number's environment and listed various stakeholders surrounded a mobile number. As a result, we proposed few possible alternatives, Standards, uniform practices and developed a Cooling Exchange concept as a common platform among stakeholders of mobile numbers to address the challenges raised due to Recycled mobile numbers

**Keywords—** Mobile Phone Numbers, Re-use (or) Re-Cycling (or) Re-Allotment (or) Re-assignment of mobile phone numbers, Phone Number Cycle, Phone number echo-system, Mobile Number as crucial data informatics, Solution for consequences & challenges of recycled mobile phone numbers. Cooling period, Common Platform, Cooling Exchange for MobileNumbers.

## I. INTRODUCTION

### 1.1. Background

Using mobile services by a normal person is a basic need across the globe. Mobile subscribing is increasing continuously for the past many years due to technology adoption as well as affordable tariffs/rates offered. Many times it is observed that people are having multiple mobile connections, i.e. using more than one mobile connection by a single user. This is caused by the paucity of fresh mobile numbers for allotting new connections. This situation is leading to the re-cycle of mobile numbers, i.e. re-use of disconnected/closed mobile numbers after certain periods (example: after a gap of Grace Periods-1 (GP1) & grace Period-2(GP2) – in India) and re-allotting for new mobile connections. The scenario of recycled mobile numbers, it's stakeholders, and to arrive at a possible solution to overcome the difficulties/challenges are dealt with in this paper.

### 1.2.ITU Standards

International Telecommunications Union (ITU) is the global telecommunications standards body. ITU-T E.164 is the international public telecommunication numbering plan recommendations of ITU and is the basis of the numbering plan of all Nations. This numbering plan is composed of a variable number of decimal digits arranged in specific code fields.

The International ITU-T E.164 number for geographic areas is composed of decimal digits arranged in two code fields: the country code (CC) and the National (significant) Number N(S)N. The National (Significant) Number may be further subdivided into National Destination Code (NDC) and Subscriber Number (SN) fields, according to National requirements.

## II. RELATED WORK

a. The subject is a new dimension/orientation and there is no specific literature is available as on date. Through the web few on-line write-ups / news items/web informatics related to this topic taken as the basis for the study on the recycling of the mobile numbers. Almost all of them focused on experiences of individual customers, and few are purely informative in nature to caution about the consequences that arise at the time of changing their mobile number, as well few are about advising customers in this regard. The details of a few of them are as follows:

b. Shri. Ashok Goyal, through an online portal, [7] explained the importance of change/disconnection of the mobile number which was earlier used/registered for bank accounts/loans/social media, etc. In this write-up, it also mentioned about the possibilities & adverse effects on both

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Installation and maintenance of all types of Transmission systems like PCM, Optical Fiber Cable construction, Installation & testing of all types of PDH, SDH, DWDM, and FTTH equipment belongs to various vendors manufactured during the last 25 years. Also had work experience in the Erection of all types of Mobile Communication towers (GBT, RTT, and Pole), equipment installation, and testing including RF Engineering, Hardware testing, conducting of Drive test to optimize the Mobile Network. Recently during 2019 initiated the project of Triple play service over Fiber (Telephone+ High-speed Internet + Cable TV) in Visakhapatnam first time in India in association with MSO Cable operator.

#### Academic Experience:

Initiated first time in India Skill development MOU's with Universities and Engineering Colleges and signed a good number of MOU's.

- 1) Nearly 7000 students were done interim ship/ project work in the ECE Engineering stream from 2004 to 2019 under his guidance in Optical Fiber Communications, Mobile communications, and in Wireless Technologies including the EETP program sponsored by AICTE.
- 2) Nearly 230 students were done apprenticeship under his guidance in the Diploma ECE branch in various sections for a period of 6 months up to the year 2018.
- 3) Nearly 100 students were done project work in Management (HRM&MKTG) for 4/6 weeks period in the year 2018.
- 4) Experience as a faculty for the Employability Enhancement Training Programme (EETP) sponsored for AICTE, SILVER, GOLD, and PLATINUM and imparting soft and communication skills for 600 students between the years 2013 to 2015.

#### Paper Publication:

- 1) Published paper in the International Journal of Socio Technology & Knowledge Development on "Customers' Satisfaction towards Mobile Prepaid Services: A Study of BSNL in Visakhapatnam District, Andhra Pradesh" Volume 1| Issue 1| January – March 2018.
- 2) Published paper in the International Journal of Research and Analytical Review (IJRAR) on "A COMPREHENSIVE STUDY ON BSNL REVIVAL

CASE STUDY OF VOLUNTARY RETIREMENT SCHEME (VRS) -2019." Volume 7 | Issue 1 | March 2020.

- 3) Published paper in the "International Journal of Scientific Research in Network Security and Communication", on "BIRD'S EYE VIEW ON MOBILE NUMBER PORTABILITY". Volume 8|issue2| April 2020
- 4) Published paper in the "International Journal of Scientific Development and Research (IJS DR) on "Outlook on Public Sector Telecom Provider (BSNL&MTNL) in India-Continues to Bleed" Volume 5 | Issue 6 | June 2020.
- 5)Published paper in the "International Journal of Scientific Research in Network Security and Communication", on "DESIGN & IMPLEMENTATION OF TRIPLE PLAY SERVICE ON OPTICAL FIBER CABLE.Vol.8, Issue.3, June 2020".

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