

**1) Research Projects : 01**

| Year    | Sr. No | Type of the Project (Major/Minor) | Title of the Project   | Funding Agency | Amount Sanctioned | Date of Sanction | Duration of the Project | Present Status (Completed/Ongoing/Submitted) |
|---------|--------|-----------------------------------|--|----------------|-------------------|------------------|-------------------------|--|
| 2010-11 | 1      |                                   |  |                |                   |                  |                         |  |
| 2011-12 | 1      |                                   |  |                |                   |                  |                         |  |
| 2012-13 | 1      |                                   |  |                |                   |                  |                         |  |
| 2013-14 | 1      |                                   |  |                |                   |                  |                         |  |
| 2014-15 | 1      | Minor                             | Theoretical Investigations on Self-Focusing of High Power Laser Beams in Quantum Plasmas | UGC            |                   |                  |                         | Submitted<br>31/07/2015                      |

**2) Research Publications : 21**

| Year    | Type of the Journal | Sr. No. | Name & ISSN No. Of the Journal       | Title of the Research Paper / Article   | Publishing Entity/Agency   | Issue/ Volume No & Year of Publication | Impact Factor | Total for the Year |
|---------|---------------------|---------|--------------------------------------|---|----------------------------|--|---------------|--------------------|
| 2010-11 | IN                  | 1       | Laser Particle Beams                 | Focusing of Hermite-cosh-Gaussian laser beams in collisionless magnetoplasma  | Cambridge University Press | 28 (2010) 343                          |               | <b>02</b>          |
|         | IN                  | 2       | Journal of Optics                    | Characterization of cadmium selenide thin films by electrodeposition and its holographic study                            | Optical Society of India   | 39 (2010) 167                          |               |                    |
| 2011-12 |                     | 3       | Optik                                | Cross focusing of two coaxial cosh-Gaussian laser beams in a parabolic medium,  | Elsevier                   | 122 (2011) 1869                        |               | <b>04</b>          |
|         |                     | 4       | Archives of Applied Science Research | Surface deformation of cadmium telluride thin films by DEHI technique   | Scholar Research Library   | 3 (2011) 186                           |               |                    |
|         |                     | 5       | Optics and Lasers in Engineering     | Impact of linear absorption on self-focusing of Gaussian laser beam in collisional plasma                                 | Elsevier                   | 50 (2012) 1316                         |               |                    |
|         |                     | 6       | Optics and Laser Technology          | Relativistic self-focusing of cosh-Gaussian laser beams in a plasma   | Elsevier                   | 44 (2012) 314                          |               |                    |
| 2012-13 |                     | 7       | Applied Physics B                    | Combined effect of ponderomotive and relativistic self-focusing on laser beam propagation in a plasma                     | Springer                   | 111 (2013) 1                           |               | <b>06</b>          |
|         |                     | 8       | Optik                                | Self-focusing of Gaussian laser beam in relativistic cold quantum plasma  | Elsevier                   | 124 (2013) 180                         |               |                    |
|         |                     | 9       | Physics of Plasmas                   | Stationary self-focusing of Gaussian laser beam in relativistic thermal quantum plasma,                                   | AIP                        | 20 (2013) 072703                       |               |                    |
|         |                     | 11      | Laser Physics Letters                | Weakly relativistic ponderomotive effects on self-focusing in the interaction of cosh-Gaussian laser beams with a plasma, | IOP                        | 10 (2013) 115402                       |               |                    |

**Dr. S. D. Patil, Department of Physics**

|         |  |    |   |  |                            |                  |  |           |
|---------|--|----|---|--|----------------------------|------------------|--|-----------|
|         |  | 12 | International Journal of Applied Physics                | Stationary self-focusing of Gaussian laser beam in relativistic thermal quantum plasma using upward ramp density profile,                        | Research India Publication | 3 (2013) 59      |  |           |
| 2013-14 |  | 13 | Asian Journal of Research in Chemistry                  | Analysis of equation of state and bulk modulus for solid Al  | AJRC                       | 7 (2014) 1059    |  | <b>06</b> |
|         |  | 14 | Asian Journal of Research in Chemistry                  | Size dependent cohesive energy, melting temperature and Debye temperature of Silver nanoparticles  | AJRC                       | 7 (2014) 1013    |  |           |
|         |  | 15 | Physics of Plasmas                                      | Response to "Comment on Stationary self-focusing of Gaussian laser beam in relativistic thermal quantum plasma, 21 (2014) 064701"                | AIP                        | 21 (2014) 064702 |  |           |
|         |  | 16 | International Journal of Chemical and Physical Sciences | Effect of size and shape on Young's modulus of nanostructured Ag by Lindemann's Criterion  | IJCPS                      | 3 (2014) 150     |  |           |
|         |  | 17 | Rasayan Journal of Chemistry                            | Influence of ionic strength on thermodynamic constant of complexes of chloro substituted pyrazole with Cu(II), Tb(III) and Nd(III) metal ions    | RJC                        | 7 (2014) 346     |  |           |
|         |  | 18 | Advances in Applied Science Research                    | Surface deformation of BaSrTiO <sub>3</sub> by DEHI Technique  | Pelagia Research Library   | 5 (2014) 197     |  |           |
| 2014-15 |  | 19 | European Physical Journal D                             | Effect of light absorption on relativistic self-focusing of Gaussian laser beam in plasma,   | Springer                   | 69 (2015) 163    |  | <b>03</b> |
|         |  | 20 | Central European Journal of Experimental Biology        | Plant Responses to Vehicular Pollution: Effect on Photosynthetic Pigments of Plants at divider of NH-4 highway Nipani Area Karnataka State India | Scholar Research Library   | 4 (2015) 16      |  |           |
|         |  | 21 | International Journal of Multidisciplinary Research     | Analysis of equation of state and bulk modulus of argon  | Jai Hind Publication       | 3 (2015) 46      |  |           |

### 3) Research Papers Presented

| Year    | Type of the Conference/Seminar | Sr. No. | Title of the Research Paper Presented   | Theme of the Conference/Seminar   | Organising Institute/College                                    | Date of the Conference/Seminar                 | Total for the Year |
|---------|--------------------------------|---------|---|---|---|--|--------------------|
| 2011-12 | State Level                    | 1       | Theoretical investigations on self-focusing of laser beams in plasmas   | Nanotechnology: Fabrication Methods and Its Applications  | Dept. of Physics, Abasaheb Marathe College, Rajapur             | 2 <sup>nd</sup> & 3 <sup>rd</sup> Dec. 2011    | 03                 |
|         | International                  | 2       | Self focusing of Gaussian laser beam in collisional plasma: Effect of linear absorption and initial curvature of the beam           | 1 <sup>st</sup> International Conference on Physics of Materials and Materials Based Device Fabrication | Department of Physics, Shivaji University, Kolhapur             | 17 <sup>th</sup> -19 <sup>th</sup> Jan. 2011   |                    |
|         | International                  | 3       | Theoretical investigations on propagation characteristics of asymmetric laser modes in collisionless plasma under weak nonlinearity | 1 <sup>st</sup> International Conference on Physics of Materials and Materials Based Device Fabrication | Department of Physics, Shivaji University, Kolhapur             | 17 <sup>th</sup> -19 <sup>th</sup> Jan. 2011   |                    |
| 2012-13 |                                |         |   |   |   |  | NIL                |
| 2013-14 | International                  | 1       | Effect of Linear Absorption on evolution of cosh-Gaussian Laser Beams in a Plasma with Weakly Relativistic and Ponderomotive Regime | 2 <sup>nd</sup> International Conference on Physics of Materials and Materials based Device Fabrication | Department of Physics, Shivaji University, Kolhapur             | 13 <sup>th</sup> -15 <sup>th</sup> Jan. 2014   | 03                 |
|         | International                  | 2       | Theoretical investigations on propagation characteristics of Gaussian laser mode in slightly ionized plasma under weak nonlinearity | 2 <sup>nd</sup> International Conference on Physics of Materials and Materials based Device Fabrication | Department of Physics, Shivaji University, Kolhapur             | 13 <sup>th</sup> -15 <sup>th</sup> Jan. 2014   |                    |
|         | International                  | 3       | Size dependent nonlinear melting temperature of silver nanoparticles using Guisbier's model   | International Conference on Advanced and Applied Material Science                                       | Department of Physics, GKG College, Kolhapur                    | 15 <sup>th</sup> & 16 <sup>th</sup> Jan. 2014  |                    |
| 2014-15 | National                       | 1       | Analysis of Equation of state and bulk modulus for solid aluminium  | National Conference on Recent Trends in Chemical Sciences   | Department of Chemistry, Devchand College, Arjun Nagar          | 18 <sup>th</sup> & 19 <sup>th</sup> Sept. 2014 | 06                 |
|         | National                       | 2       | Theoretical study of pressure dependent bulk modulus of argon   | National Seminar on Recent Trends in Biophysics   | Department of Physics and Botany, Devchand College, Arjun Nagar | 19 <sup>th</sup> & 20 <sup>th</sup> Sept. 2014 |                    |
|         | National                       | 3       | Effect of ultrasonic waves treatment on seed germination of <i>Lycopersicon esculentum</i> and <i>Anethum graveolens</i>            | National Seminar on Recent Trends in Biophysics   | Department of Physics and Botany, Devchand College, Arjun Nagar | 19 <sup>th</sup> & 20 <sup>th</sup> Sept. 2014 |                    |
|         | National                       | 4       | Spray deposited Mg-ZnO thin films for NO <sub>2</sub> sensing application   | National Seminar on Recent Trends in Biophysics   | Department of Physics and Botany, Devchand College, Arjun Nagar | 19 <sup>th</sup> & 20 <sup>th</sup> Sept. 2014 |                    |
|         | International                  | 5       | Analysis of equation of state and bulk modulus of argon   | 1 <sup>st</sup> International Research Conference   | Devchand College, Arjun Nagar                                   | 14 <sup>th</sup> Feb. 2015                     |                    |
|         | International                  | 6       | Synthesis of Magnesium Nanoparticles by using plant extract and study of their antibacterial activity                               | ETBAS   | K.H. College, Gargoti   | 10 <sup>th</sup> March 2015                    |                    |

Dr. S. D. Patil, Department of Physics

4) Books Published / Contribution in the Book : NIL

5) Contribution as a Resource Person : 01

| Year    | Type of the Conference/Seminar | Sr. No. | Topic dealt with as Resource Person | Theme of the Conference/Seminar     | Organising Institute/ College                              | Date of the Conference/Seminar | Total for the Year |
|---------|--------------------------------|---------|-------------------------------------|-------------------------------------|--|--------------------------------|--------------------|
| 2011-12 | Regional                       | 1       | Conductivity                        | One Day Workshop on Instrumentation | Department of Physics & AGPM, Devchand College, Arjunnagar | 4 <sup>th</sup> Jan. 2012      | 01                 |
| 2012-13 |                                |         |                                     |                                     |  |                                | NIL                |
| 2013-14 |                                |         |                                     |                                     |  |                                | NIL                |
| 2014-15 |                                |         |                                     |                                     |  |                                | NIL                |

6) Conferences, Seminars & Workshops Attended : 12

| Year    | Type of the Conference/Seminar | Sr. No. | Theme of the Conference/Seminar  | Organising Institute/ College                                    | Date of the Conference/Seminar                | Total for the Year |
|---------|--------------------------------|---------|--|--|---|--------------------|
| 2011-12 | State Level                    | 1       | Nuclear Chemistry  | Department of Physics and Chemistry, Shivaraj College Gadhinglaj | 14 <sup>th</sup> & 15 <sup>th</sup> Feb. 2011 | 03                 |
|         | National                       | 2       | Physics of Materials and Materials based Device Fabrication  | Department of Physics, Shivaji University, Kolhapur              | 17 <sup>th</sup> & 18 <sup>th</sup> Feb. 2011 |                    |
|         | Regional                       | 3       | B. Sc. II Revised Syllabus   | Department of Physics, Bapuji Salunkhe Mahavidyalaya, Miraj      | 6 <sup>th</sup> Aug 2011                      |                    |
| 2012-13 | Regional                       | 1       | Discussion and guidance for the topics felt difficult during teaching of 10 <sup>th</sup> Science Subjects | Devchand College, Arjunnagar                                     | 11 <sup>th</sup> Aug 2012                     | 02                 |
|         | National                       | 2       | Recent Advances in Agricultural Botany   | Department of Botany & AGPM, Devchand College, Arjunnagar        | 27 <sup>th</sup> & 28 <sup>th</sup> Sept 2012 |                    |
| 2013-14 | National                       | 1       | Women Exploitation in India and Sensitivity  | NSS Cell, Devchand College, Arjunnagar                           | 27 <sup>th</sup> Dec 2013                     | 02                 |
|         | Regional                       | 2       | Annual Meet for Physics Students   | Department of Physics, Shivaji University, Kolhapur              | 1 <sup>st</sup> Jan. 2014                     |                    |

**Dr. S. D. Patil, Department of Physics**

|         |          |   |  |  |   |           |
|---------|----------|---|--|--|---|-----------|
| 2014-15 | Regional | 1 | B. Sc. II Revised Syllabus () organized by         | Bapuji Salunkhe Mahavidyalaya, Miraj                     | 11 <sup>th</sup> Aug. 2014                    | <b>05</b> |
|         | Regional | 2 | B. Sc. II Revised Syllabus () organized by,        | Yashwantrao Chavan College, Halkarni                     | 21 <sup>st</sup> Aug. 2014                    |           |
|         | National | 3 | Nano Materials and Nano Materials based Devices () | DKASC College, Ichalkaranji                              | 23 <sup>rd</sup> & 24 <sup>th</sup> Dec. 2014 |           |
|         | Regional | 4 | IQAC Expectations from Teachers                    | IQAC, Devchand College, Arjunnagar                       | 20 <sup>th</sup> Jan. 2015                    |           |
|         | Regional | 5 | Recent Trends in Nanotechnology                    | Department of Physics, Bhogawati Mahavidyalaya, Kurukali | 23 <sup>rd</sup> Jan. 2015                    |           |

**7) Any other as students guided for M.Phil/Ph.D. ongoing or completed, papers reviewed, theses examined, viva/scrutiny committee membership/attendance etc.**

- **Worked as a potential Referee for following journals**
  - Physics of Plasmas, American Institute of Physics
  - Laser and Particle Beams, Cambridge University Press
  - Optics Communications, Elsevier Publishing

**8) Faculty Development Programmes Completed : 02**

| Year    | Name of the Course/<br>Summer School                                 | Place  | Duration                 | Sponsoring Agency |
|---------|--|--|--------------------------|-------------------|
| 2011-12 |  |  |                          |                   |
| 2012-13 | 85 <sup>th</sup> Orientation Programme                               | ASC, University of Rajasthan, Jaipur             | 19-11-2012 to 15-12-2012 | UGC               |
| 2013-14 | Refresher Course in Pure Sciences (Physics, Chemistry & Mathematics) | ASC, Guru Nanak Dev University, Amritsar, Punjab | 15-05-2014 to 04-06-2014 | UGC               |
| 2014-15 |  |  |                          |                   |