

## FACULTY PROFILE



1	Name	Prabal Kumar Sinha
2	Designation	Associate Professor
3	Educational Qualification	M. Sc. Ph. D.
4	Teaching Experience	26 years in undergraduate level
5	List of Publications	<p><b>Publications in Journals:</b></p> <ol style="list-style-type: none"><li>1. Ps–H scattering using the three-state positronium close-coupling approximation — Prabal K. Sinha, Puspitapallab Chaudhuri, and A. S. Ghosh, <b>J. Phys. B: 30</b>, pp-4643 (1997).</li><li>2. Positronium-hydrogen atom scattering using the six-state close-coupling approximation — Prabal K. Sinha and A. S. Ghosh, <b>Phys. Rev. A: 58</b>, pp-242 (1998).</li><li>3. Theory of positronium-atom scattering — A. S. Ghosh, Prabal K. Sinha, and H Ray, <b>Nucl. Instrum. Methods Phys. Res. B: 143</b>, pp-162 (1998).</li><li>4. Hydrogen — anti-hydrogen elastic scattering using fully quantal method — Prabal K. Sinha and A. S. Ghosh, <b>Europhys. Lett.: 49</b>, pp-558 (2000).</li><li>5. Low energy positronium-hydrogen elastic scattering using six-state close-coupling approximation — Prabal K. Sinha, Arindam Basu, and A. S. Ghosh, <b>J. Phys. B: 33</b>, pp- 2579 (2000).</li><li>6. Effect of Target Inelastic Channels In Positronium-Hydrogen Scattering — Arindam Basu, Prabal K. Sinha, and A. S. Ghosh, <b>Phys. Rev. A: 63</b>, pp-012502 (2001).</li><li>7. Ps-He scattering below the first target excitation threshold — A. S. Ghosh, Arindam Basu, Tapan Mukherjee and Prabal K. Sinha, <b>Phys. Rev. A: 63</b>, pp-042706 (2001).</li><li>8. Scattering of orthopositronium off a helium atom — Arindam</li></ol>

Basu, Prabal K. Sinha, and A. S. Ghosh, **Phys. Rev. A**: **63**, pp-052503 (2001).

9. Ortho-positronium — sodium scattering using the CCA in the integral representation — Prabal K. Sinha, Puspitapallab Chaudhuri, and A. S. Ghosh, **Phys. Rev. A**: **65**, pp-022509 (2002).
10. Ortho-positronium — lithium scattering using a CCA at low and medium energies — Ajoy Chakraborty, Prabal K. Sinha, and A. S. Ghosh, **Phys. Rev. A**: **65**, pp-062504 (2002).
11. Capture cross section in  $H-\bar{H}$  scattering — Prabal K. Sinha and A. S. Ghosh, **J. Phys. B**: **35**, pp-L281 (2002).
12. Antihydrogen — hydrogen elastic scattering using atomic orbital technique at thermal energies — Prabal K. Sinha, Puspitapallab Chaudhuri, and A. S. Ghosh, **Phys. Rev. A**, **67**, pp-052509 (2003)
13. Ultra-cold  $\bar{H}-He$  scattering — Prabal K. Sinha and A. S. Ghosh, **Phys. Rev. A**, **68**, pp-022504 (2003).
14. Total elastic cross section for  $\bar{H}-H$  at thermal energies — Prabal K. Sinha, Puspitapallab Chaudhuri, and A. S. Ghosh, **Phys. Rev. A**, **69**, pp-014701 (2004).
15. Antiatom — atom scattering with the close-coupling model — Sumana Chakraborty, Arindam Basu, Puspitapallab Chaudhuri, Prabal K. Sinha, and A. S. Ghosh, **Nucl. Instrum. Methods Phys. Res. B**: **221**, pp-12 (2004)
16. Positronium — alkali atoms scattering at medium energies, Ajoy Chakraborty, Arindam Basu, Nirmal K. Sarkar, and Prabal K. Sinha **J. Phys. B**: **37**, pp-1709 (2004).
17. S-wave  $Ps-Li$  and  $Ps-Na$  scattering — Sumana Chakraborty, Prabal K. Sinha, and A. S. Ghosh **Phys. Rev. A**, **69**, pp-052506 (2004).
18.  $\bar{H}-He$  elastic scattering at ultra-cold temperatures: Contribution of non-zero partial waves — Prabal K. Sinha and A. S. Ghosh **Phys. Rev. A**, **71**, pp-012505 (2005).
19.  $\bar{H}-Li$  scattering and enhanced  $\bar{H}$  cooling — Prabal K. Sinha, and A. S. Ghosh, **Phys. Rev. A**, **72**, pp-052509 (2005).
20. S-wave elastic scattering of antihydrogen off atomic alkali-metal targets— Prabal K. Sinha, and A. S. Ghosh **Phys. Rev. A**, **73**, pp-032711 (2006).
21. Scattering of  $\bar{H}(1s)$  off metastable helium at thermal energies

		<p>— Prabal K. Sinha, and A. S. Ghosh <b>Phys. Rev. A</b>, 72, pp-062710 (2006).</p> <p>22. Anti-Hydrogen — Meta-stable helium elastic scattering at thermal energies — Prabal K. Sinha, and A. S. Ghosh, <b>Nucl. Instrum. Methods Phys. Res. B</b>: 266, pp-379 (2008).</p> <p><b>Conference Proceedings/Books</b></p> <ol style="list-style-type: none"> <li>1. Present status of matter — anti-matter interaction — A. S. Ghosh and Prabal K Sinha, Proceedings of the Conf. “Atomic Physics at the Frontiers” held at Roorkee University, Roorkee (2000).</li> <li>2. Scattering off positronium atom off atomic hydrogen and helium targets — A. S. Ghosh and Prabal K Sinha, Collection of articles “positron and Positronium Interactions: New Directions” held at ITAMP, Harvard (Oct., 2000) (Published as a volume in the <i>Advances of Quantum Chemistry</i>, Kluwer Academic Press, The Netherlands).</li> </ol>
6	Research Projects undertaken	<p><b>PROJECT No. 1:</b></p> <ol style="list-style-type: none"> <li>a. Project title: Many Positrons and many Positronium interactions and its dynamics.</li> <li>b. Funding Agency: Dept. of Atomic Energy, Govt. of India, New Delhi.</li> <li>c. Duration: 2002 to 2006</li> <li>d. Total Amount Sanctioned: Rs. 8,21,000/-</li> <li>e. Status: Completed.</li> <li>f. Project Carried out at: Department of Theoretical Physics, Indian Association for the Cultivation of Science</li> <li>g. Other Investigator(s): Prof. A. S. Ghosh (PI), Ret'd from Department of Theoretical Physics, Indian Association for the Cultivation of Science.</li> </ol> <p><b>PROJECT No. 2:</b></p> <ol style="list-style-type: none"> <li>a. Project title: Ion-Atom and Atom-Atom scattering at thermal energies in relevance to BEC.</li> <li>b. Funding Agency: Dept. of Science and Technology, Govt. of</li> </ol>

		<p>India, New Delhi.</p> <p>c. Duration: 2004 to 2007</p> <p>d. Total Amount Sanctioned: Rs. 14,64,720/-</p> <p>e. Status: Completed</p> <p>f. Project Carried out at: Department of Theoretical Physics, Indian Association for the Cultivation of Science</p> <p>g. Other Investigator(s): Prof. A. S. Ghosh (PI), Ret'd from Department of Theoretical Physics, Indian Association for the Cultivation of Science and Prof. J. K. Bhattacharyya (CI), Department of Theoretical Physics, Indian Association for the Cultivation of Science.</p>
7	Seminars attended as resource person	Nil
8	Honours/Awards conferred (if any)	Nil
9	Membership of National/ International Body/Organization (if any)	Nil
10	Extracurricular activities	Nil