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LIST OF PUBLICATIONS

LIST OF RESEARCH PAPERS:

1. R. S. Kasana and **Arvind Kumar Deshmukh**, "Refractometry of liquid by using liquid immersion and three beam interferometric techniques", *International Journal of Pure and Applied Physics*, 6(3), 263-268(2010).
2. R. S. Kasana and **Arvind Kumar Deshmukh**, "Refractometry of air with liquied immersion method", *Atti Della "Fondazione Giorgio Ronchi"*, Vol. Anno LXV(N-4), 2010 (Accepted).
3. **Arvind Kumar Deshmukh** and R. S. Kasana, "Study the variation of refractive index of fluid with temperature by using Y-guide fiber optic refractometer", *International Journal of Computer and Engineering*, Vol. 1, Issue 1, p.25-28(2010).
4. R. S. Kasana and **Arvind Kumar Deshmukh**, "Fiber optic interferometer refractometer for the study of variation of refractive of refractive index of sodium chloride with concentration", *International Journal of Physical Sciences, Ultra Science*, 22(1), 19-24 (2010).
5. **Arvind Kumar Deshmukh** and R.S. Kasana, "Refractometry of lens material by using interferometric techniques" *International Journal of Physics & Applications*, RIP-3946-IJPA (Accepted)
6. **Arvind Kumar Deshmukh** and R.S. Kasana, "Refractometry of lens by using Lummer Gehrcke plate interferometer" (Communicated).
7. D. Shukla, V. Tiwari, S. Thakur and **Arvind Deshmukh** (2009): Share loss analysis of Internet traffic distribution in computer networks, In *International Journal of Computer Science and Security (IJCSS) Malaysia*, Vol. 3, Issue 5, pp. 414-427.
8. D. Shukla, V. Tiwari, S. Thakur and **A. Deshmukh** (2010): Two Call Based Analysis of Internet Traffic Sharing, In *International Journal of Computer and Engineering (IJCE-2010)*, India, vol. 01, issue 01, pp. 14-24.
9. Diwakar Shukla, Sanjay Thakur & **Arvind Kumar Deshmukh**: "State Probability Analysis of Internet Traffic Sharing in Computer Network" *International Journals of Advanced Networking and Applications* - Vol-1, issue - 02, 90 - 95 (2009).
10. **Arvind Kumar Deshmukh**: Presented a research paper in National Conference on Wireless Network - Emerging Trends & Technology - "Systems & Methods for detecting Ultrasound using time - Delay with fiber optic Interferometry", *Abstract Book Page No. 08*, (2008).