



Universidade Federal Rural de Pernambuco – UFRPE
Departamento de Física
Programa de Pós – Graduação em Física Aplicada

Disciplina	PGFA 7331 – Spintrônica em Dispositivos Desordenados	
Eletivas	Carga Horária: 60 h/semestre	Créditos: 04
Ementa		
I – Formalismo de Landauer – Büttiker com grau de liberdade de spin.		
II – Corrente de spin, efeito spin Hall e efeito spin Hall inverso.		
III – Teoria de matriz aleatórias aplicada a spintrônica.		
IV – Modelo tight-binding aplicado a spintrônica.		
Bibliografia		
P. Jacquod, R. S. Whitney, J. Meair, and M Büttiker, “ <i>Onsager relations in coupled electric, thermoelectric, and spin transport: The tenfold way</i> ”, Physical Review B 86, 155118 (2012).		
J. Sinova, Sergio O. Valenzuela, J. Wunderlich, C. H. Back, and T. Jungwirth ,” <i>Spin Hall effects</i> ”, Rev. Mod. Phys. 87, 1213 (2015).		
T. C. Vasconcelos, ¹ J. G. G. S. Ramos, and A. L. R. Barbosa, “ <i>Universal spin Hall conductance fluctuations in chaotic Dirac quantum dots</i> ”, Physical Review B 93, 115120 (2016).		
J. G. G. S. Ramos, T. C. Vasconcelos, and A. L. R.Barbosa, “ <i>Spin-to-charge conversion in 2D electron gas and single-layer graphene devices</i> ”, Journal of Applied Physics123, 034304 (2018).		



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Disciple	PGFA 7331 – Spintronics in Disordered Devices	
Elective	Hours: 60 h/semester	Credits: 04
Program		
<p>I – Landauer – Büttiker formalism with spin degree of freedom.</p> <p>II – Spin current, spin Hall effect and inverse spin Hall effect.</p> <p>III – Random matrix theory applied to spintronics.</p> <p>IV – Tight-binding model applied to spintronics.</p>		
Bibliography		
<p>P. Jacquod, R. S. Whitney, J. Meair, and M Büttiker, “<i>Onsager relations in coupled electric, thermoelectric, and spin transport: The tenfold way</i>”, Physical Review B 86, 155118 (2012).</p> <p>J. Sinova, Sergio O. Valenzuela, J. Wunderlich, C. H. Back, and T. Jungwirth ,”<i>Spin Hall effects</i>”, Rev. Mod. Phys. 87, 1213 (2015).</p> <p>T. C. Vasconcelos,1 J. G. G. S. Ramos, and A. L. R. Barbosa, “<i>Universal spin Hall conductance fluctuations in chaotic Dirac quantum dots</i>”, Physical Review B 93, 115120 (2016).</p> <p>J. G. G. S. Ramos, T. C. Vasconcelos, and A. L. R.Barbosa, “<i>Spin-to-charge conversion in 2D electron gas and single-layer graphene devices</i>”, Journal of Applied Physics123, 034304 (2018).</p>		