**1. Adrien’s review talk on 'A primer on the covariant phase space formalism'**

While preparing the talk, I was using pedagogical material from the following notes:  
1. G. Compère, A. Fiorucci: Advanced Lectures on General Relativity, arXiv:1801.07064 [chapters 1 and 3]  
2. A. Fiorucci: Leaky covariant phase spaces: Theory and application to Λ-BMS symmetry (PhD thesis) arXiv:2112.07666 [chapter 2]  
  
For the original references on the covariant phase space formalism as imagined by Wald and coworkers, please have a look to:  
3. J. Lee, R. Wald: Local symmetries and constraints, J.Math.Phys. 31 (1990) 725-743  
4. R. Wald: Black hole entropy is the Noether charge, Phys.Rev.D 48 (1993) 8, R3427-R3431, arXiv:9307038  
5. V. Iyer, R. Wald: Some properties of Noether charge and a proposal for dynamical black hole entropy, Phys.Rev.D 50 (1994) 846-864, arXiv:9403028  
6. R. Wald and A. Zoupas: A General definition of ’conserved quantities’ in general relativity and other theories of gravity, Phys. Rev. D61 (2000) 084027, arXiv:9911095.  
  
As I mentioned during my talk, there is another formulation of covariant phase space methods, using a presymplectic current defined only from the equations of motion (hence called "invariant"). This was introduced by Barnich, Brandt and coworkers in the following series of papers:  
7. G. Barnich and F. Brandt: Covariant theory of asymptotic symmetries, conservation laws and central charges, Nucl. Phys. B633 (2002) 3–82, arXiv:0111246.  
8. G. Barnich: Boundary charges in gauge theories: Using Stokes theorem in the bulk, Class. Quant. Grav. 20 (2003) 3685–3698, arXiv:0301039.  
9. G. Barnich and G. Compère: Surface charge algebra in gauge theories and thermodynamic integrability, J. Math. Phys. 49 (2008) 042901, arXiv:0708.2378.  
10. First occurence of the Barnich-Troessaert bracket for BMS4 charge algebra, see G. Barnich, C. Troessaert: BMS charge algebra, JHEP 12 (2011) 105, arXiv:1106.0213.  
For pedagogical presentations of this formalism:  
11. G. Compère: Symmetries and conservation laws in Lagrangian gauge theories with applications to the mechanics of black holes and to gravity in three dimensions. PhD thesis (2007) arXiv:0708.3153 [chapters I.1, I.2, II.5 and appendices]  
12. R. Ruzziconi: Asymptotic Symmetries in the Gauge Fixing Approach and the BMS Group, PoS Modave 2019 (2020) 003, arXiv:1910.08367.  
Short introductions to this formalism can also be found in the lecture notes 1. and 2.  
  
Thank you again for attending my talk and please do not hesitate to contact me if you have more questions or in case you want more reading advices on this exciting topic.  
  
With best regards,  
  
Adrien