Target/audience: Adnexal masses can be depicted by many imaging modalities (US, CT, MR, PET-FDG). However, the characterization of adnexal tumors is mainly based on MRI.

Introduction: For complex adnexal masses, MR imaging add to conventional criteria of malignancy common to all imaging modalities (bilaterality, tumor diameter larger than 4 cm, predominantly solid mass, cystic tumor with vegetations, and secondary malignant features, such as ascites, peritoneal involvement, and enlarged lymph nodes) specific features based on the characterization of the solid tissue (including vegetation, thickened irregular septa and solid portion) of the adnexal tumor.

Objectives
1.       To learn how to optimise the MRI protocol and how to improve the characterisation of indeterminate complex adnexal masses.
2.       To understand the added value of functional sequences (DCE MRI and DWI) in diagnosing adnexal masses.
3.       To present a novel diagnostic score named ADNEX MR score for classified adnexal masses using MR imaging according to their positive predictive value

Purpose and methods: Using multivariate analysis, an interpretation model will be presented combining morphological and functional criteria especially using signal intensity of solid tissue on T2 sequence (fibrous tissue), perfusion (neoangiogenesis) and  diffusion (cellularity) with the objective to build a five-category MR scoring system depending of the positive predictive value of malignancy of adnexal mass

Results: Using ADNEX MR-SCORING system for adnexal masses, areas under the curve for diagnosis of malignancy is high both for experienced and junior reader (AUCR1/R2=0.980/0.961). A score is 4 or greater is associated with malignancy with a sensitivity of 93.5% (58/62) and specificity of 96.6% (258/267), the risk of malignancy is high, and the patient should be referred to a cancer center. When the diagnostic score is 3 or less, the association with malignancy is minimal and the patient may benefit from more imaging follow-up or conservative treatment.  Finally, if the diagnostic score is 2, the mass has a very low risk to be malignant (<2%)

Conclusion: A MR diagnosis classification will be detailed with potential applications on therapeutic strategy.. The most important pronostic factor for ovarian cancer is the absence of residual tissue after the first surgery. Thus, all imaging modalities have to help the surgeon to opt for the best treatment . This high diagnostic confidence rate may also  help young women wishing to preserve childbearing potential to opt for conservative surgery and avoid the systematic removal of benign complex adnexal masses in menopausal women.