Qualitative Check of results

RELVANT	WHY	identifier	url	title	description
0,57					
1	Elliptical galaxy	NGC 3115	https://arxiv.org/abs/1112.3120	Surface brightness and intrinsic luminosity of ellipticals	We show that the surface brightness profiles of elliptical galaxies can be parametrized using a linear superposition of two or three components, each of which is described by functions developed in Dhar & Williams as the 2D projections of a 3D Einasto density profile. For a sample of 23 ellipticals in and around the Virgo Cluster with total absolute V magnitude -24 < MVT < -15, our multicomponent models span a dynamic range up to 106 in surface brightness and up to 105 in radius down to the resolution limit of the Hubble Space Telescope, have a median rms of 0.032 mag arcsec-2 consistent with the rms of 0.03 from random errors of the data, and are statistically justified at >3σ. Our models indicate that (i) the central component is more concentrated than the outer component; and (ii) the central component of massive shallow-cusp ('core') galaxies is much more luminous, extended and concentrated than that of steep-cusp ('cuspy') galaxies, with their near exponential central profiles indicating disc-like systems, whose existence must be verified spectroscopically. Galaxy structure can thus be modelled extremely well with a central mass excess for all galaxies. This is not necessarily contrary to the notion of a mass deficit in 'core' galaxies, since mass ejection due to core scouring by a supermassive black hole (SMBH) binary could have affected the shape of the central components. However, we show that the existence, amount, radial extent and sign of such deficits disagree substantially in the literature, both for a given galaxy and on an average over a sample. We discuss possible implications and suggest that SMBH binaries are unlikely to be the sole mechanism for producing the large 'cores' of massive galaxies. Using results from the SAURON survey, we deduce that under certain conditions of symmetry, inclination angles and degree of triaxiality, the intrinsic (3D) density of light can be well described with a multicomponent Einasto model for both steep- and shallow-cusp galaxies. This indicates a universality in the functional form describing the 3D density distribution of light in galaxies and dark matter in Λ cold dark matter (ΛCDM) N-body haloes. Finally, planetary nebulae and strong-lensing observations, and the Einasto index n of ΛCDM dark matter haloes, indicate that our result - the outer component of the surface brightness profiles of massive galaxies has 5 ≲ n ≲ 8 - could imply (i) a common feature of collisionless systems; and (ii) that galaxies with such n for their outer component are dark matter dominated.
0	Parallax measurements won’t probably work even for nearby galaxies such as NGC3115	NGC 3115	https://ui.adsabs.harvard.edu/abs/2008AJ....135.1430H/abstract	A New VLA-Hipparcos Distance to Betelgeuse and its Implications	The distance to the M supergiant Betelgeuse is poorly known, with the Hipparcos parallax having a significant uncertainty. For detailed numerical studies of M supergiant atmospheres and winds, accurate distances are a prerequisite to obtaining reliable estimates for many stellar parameters. New high spatial resolution, multiwavelength, NRAO33The National Radio Astronomy Observatory is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc. Very Large Array (VLA) radio positions of Betelgeuse have been obtained and then combined with Hipparcos Catalogue Intermediate Astrometric Data to derive new astrometric solutions. These new solutions indicate a smaller parallax, and hence greater distance (197 +/- 45 pc), than that given in the original Hipparcos Catalogue (131 +/- 30 pc) and in the revised Hipparcos reduction. They also confirm smaller proper motions in both right ascension and declination, as found by previous radio observations. We examine the consequences of the revised astrometric solution on Betelgeuse's interaction with its local environment, on its stellar properties, and its kinematics. We find that the most likely star-formation scenario for Betelgeuse is that it is a runaway star from the Ori OB1 association and was originally a member of a high-mass multiple system within Ori OB1a.
1	This goes one step further in analysis of stellar spectra from nearby galaxies; one such is this one	NGC 3115	https://arxiv.org/abs/1205.6932	Near-infrared spectroscopy of stellar populations in nearby spiral galaxies	We present high spatial resolution, medium spectral resolution near-infrared (NIR) H- and K-band long-slit spectroscopy for a sample of 29 nearby (z < 0.01) inactive spiral galaxies, to study the composition of their NIR stellar populations. These spectra contain a wealth of diagnostic stellar absorption lines, e.g., Mg I 1.575 μm, Si I 1.588 μm, CO (6-3) 1.619 μm, Mg I 1.711 μm, Na I 2.207 μm, Ca I 2.263 μm and the 12CO and 13CO bandheads longward of 2.29 μm. We use NIR absorption features to study the stellar population and star formation properties of the spiral galaxies along the Hubble sequence, and we produce the first high spatial resolution NIR HK-band template spectra for low-redshift spiral galaxies along the Hubble sequence. These templates will find applications in a variety of galaxy studies. The strength of the absorption lines depends on the luminosity and/or temperature of stars and, therefore, spectral indices can be used to trace the stellar population of galaxies. The entire sample indicates that the evolved red stars completely dominate the NIR spectra, and that the contribution from hot young stars is insignificant. Based on observations collected at the European Southern Observatory (ESO), Chile, programmes 068.B-0653 and 076.B-0714.
1	Paper treats motion of galaxies	NGC 3115	https://arxiv.org/abs/astro-ph/0009438	Detection of spiral magnetic fields in two flocculent galaxies	According to the classical axisymmetric dynamo concept, differentially rotating galaxies which lack organized optical spiral patterns and density wave flows should still have spiral magnetic fields with a substantial radial component. To check this hypothesis we observed two flocculent spirals, NGC 3521 and NGC 5055, in the radio continuum (total power and polarization) at 10.55 GHz with a resolution of 1farcm 13. A search for traces of optical spiral patterns has also been made by observing them in the Hα line and by filtering their available blue images. NGC 3521 and NGC 5055 were found to possess a mean degree of magnetic field ordering similar to that in grand-design spirals. However, the polarized emission fills the central region of NGC 5055 while a minimum of polarized intensity was observed in the inner disk of NGC 3521. This can be explained by a more uniform star formation distribution in the centre of NGC 3521, while a higher concentration of star-forming activity in the nuclear region and in the rudimentary spiral ``armlets'' of NGC 5055 leaves broader interarm regions with unperturbed regular magnetic fields. Both galaxies possess regular spiral magnetic fields with a radial component amounting to 40% - 60% of the azimuthal field. The use of beam-smoothed polarization models demonstrates that this result cannot be produced by limited resolution and projection effects. Furthermore, a large magnetic pitch angle cannot be entirely due to the influence of rudimentary spiral-like features visible in our Hα and enhanced optical images. Thus it appears that the dynamo process is responsible for the radial magnetic field in flocculent galaxies. The measured radial magnetic field component as compared to the azimuthal one is even stronger than predicted by a classical turbulent dynamo which provides arguments in support for modern, non-standard dynamo concepts. Partly based on observations obtained at Lowell Observatory, Flagstaff, AZ (USA)

1	**Time series analysis for nearby galaxies using Swift satellite**	**NGC 3115**	https://arxiv.org/abs/1601.03739	A time domain experiment with Swift: monitoring of seven nearby galaxies	Context. Focused on the study of transient sources, time domain astronomy today is one of the most active and growing areas of research in astronomy. Most of the present and planned surveys aimed at carrying out time domain studies work in the optical band and founded their searching strategies on fixed cadences. Although nothing similar currently exists in the X-ray and ultraviolet (UV) bands, the Swift satellite is certainly the most appropriate available instrument to carry out such surveys. Aims: We aimed to detect a supernova (SN) shock breakout (SBO) in nearby galaxies. The SBO marks the first escape of radiation from the blast wave that breaks through the photosphere of the star and launches the SN ejecta. The detection of an SBO is a diagnostic for the radius of the progenitor star and the ratio of explosion energy to ejecta mass. It also allows us to determine the onset of the explosion with an accuracy of a few hours to a few seconds. Methods: Using the XRT and UVOT instruments onboard the Swift satellite, we carried out a weekly cadenced, six-month monitoring of seven nearby galaxies: NGC 1084, NGC 2207/IC 2163, NGC 2770, NGC 4303/M 61, NGC 3147, NGC 3690, and NGC 6754. We searched for variable or transient sources in the collected data. These galaxies were selected because they are close (distance ≤50 Mpc), small enough to fit in the Swift/UVOT field of view, and are hosts of at least three SNe in the past 20 yr. Results: We found no evidence for an SN SBO event. Five objects located within the light of the sample galaxies were found to be variable in the X-ray and/or in the UV. These include mainly background active galactic nucleus and unresolved ULX in NGC 3690. In addition to these objects, we found two variable Galactic sources: the known nova CP Draconis (which experienced an outburst during our monitoring) and an uncatalogued eclipsing binary. Conclusions: Despite the lack of SBO detections, the results of our explorative study encourage the use of Swift in further time domain studies. Moreover, since our sample galaxies are within the Universe volume that will be reached by the forthcoming advanced gravitational wave (GW) detectors (a-LIGO and a-Virgo), this work provides an example on how to carry out Swift surveys from which the GW signal from SNe can be detected, and to detect counterparts to GW triggers.
1	**Nearby galaxies**	**NGC 3115**	https://arxiv.org/abs/1103.5106	Cosmic flows: University of Hawaii 2.2-m I-band photometry	Within the ‘Cosmic Flows’ project, I-band photometry of 524 relatively nearby galaxies has been carried out over the course of several years with the University of Hawaii 2.2-m telescope and a camera with a 7.5-arcmin field of view. The primary scientific goal was to provide global magnitudes and inclinations for galaxies for the purpose of measuring distances through the correlation between galaxy luminosities and rotation rates. The 1σ accuracy on a total magnitude is 0.08 mag. The observations typically extend to 7-8 exponential disc scalelengths, so the data are useful for studies of the structural properties of galaxies.
0	**Supernovae, this might be interesting if the emission and absorption lines for NGC 3115 were available, but since they were approximated (by mean) it cannot be related**	**NGC 3115**	https://arxiv.org/abs/1609.02921	LOSS Revisited. I. Unraveling Correlations Between Supernova Rates and Galaxy Properties, as Measured in a Reanalysis of the Lick Observatory Supernova Search	Most types of supernovae (SNe) have yet to be connected with their progenitor stellar systems. Here, we reanalyze the 10-year SN sample collected during 1998-2008 by the Lick Observatory Supernova Search (LOSS) in order to constrain the progenitors of SNe Ia and stripped-envelope SNe (SE SNe, I.e., SNe IIb, Ib, Ic, and broad-lined Ic). We matched the LOSS galaxy sample with spectroscopy from the Sloan Digital Sky Survey and measured SN rates as a function of galaxy stellar mass, specific star formation rate, and oxygen abundance (metallicity). We find significant correlations between the SN rates and all three galaxy properties. The SN Ia correlations are consistent with other measurements, as well as with our previous explanation of these measurements in the form of a combination of the SN Ia delay-time distribution and the correlation between galaxy mass and age. The ratio between the SE SN and SN II rates declines significantly in low-mass galaxies. This rules out single stars as SE SN progenitors, and is consistent with predictions from binary-system progenitor models. Using well-known galaxy scaling relations, any correlation between the rates and one of the galaxy properties examined here can be expressed as a correlation with the other two. These redundant correlations preclude us from establishing causality—that is, from ascertaining which of the galaxy properties (or their combination) is the physical driver for the difference between the SE SN and SN II rates. We outline several methods that have the potential to overcome this problem in future works.
1	**Treats local group of galaxies**	**NGC 3115**	https://arxiv.org/abs/1403.0626	Identification of old tidal dwarfs near early-type galaxies from deep imaging and H I observations	It has recently been proposed that the dwarf spheroidal galaxies located in the Local Group discs of satellites (DoSs) may be tidal dwarf galaxies (TDGs) born in a major merger at least 5 Gyr ago. Whether TDGs can live that long is still poorly constrained by observations. As part of deep optical and H I surveys with the Canada-France-Hawaii Telescope (CFHT) MegaCam camera and Westerbork Synthesis Radio Telescope made within the ATLAS3D project, and follow-up spectroscopic observations with the Gemini-North telescope, we have discovered old TDG candidates around several early-type galaxies. At least one of them has an oxygen abundance close to solar, as expected for a tidal origin. This confirmed pre-enriched object is located within the gigantic, but very low surface brightness, tidal tail that emanates from the elliptical galaxy, NGC 5557. An age of 4 Gyr estimated from its SED fitting makes it the oldest securely identified TDG ever found so far. We investigated the structural and gaseous properties of the TDG and of a companion located in the same collisional debris, and thus most likely of tidal origin as well. Despite several Gyr of evolution close to their parent galaxies, they kept a large gas reservoir. Their central surface brightness is low and their effective radius much larger than that of typical dwarf galaxies of the same mass. This possibly provides us with criteria to identify tidal objects which can be more easily checked than the traditional ones requiring deep spectroscopic observations. In view of the above, we discuss the survival time of TDGs and question the tidal origin of the DoSs.
0	**NGC 3115 cannot be considered massive (it’s actually half of milky way in size)**	**NGC 3115**	https://arxiv.org/abs/1407.1054	The MASSIVE Survey. I. A Volume-limited Integral-field Spectroscopic Study of the Most Massive Early-type Galaxies within 108 Mpc	Massive early-type galaxies represent the modern day remnants of the earliest major star formation episodes in the history of the universe. These galaxies are central to our understanding of the evolution of cosmic structure, stellar populations, and supermassive black holes, but the details of their complex formation histories remain uncertain. To address this situation, we have initiated the MASSIVE Survey, a volume-limited, multi-wavelength, integral-field spectroscopic (IFS) and photometric survey of the structure and dynamics of the ~100 most massive early-type galaxies within a distance of 108 Mpc. This survey probes a stellar mass range M* >~ 1011.5 M ⊙ and diverse galaxy environments that have not been systematically studied to date. Our wide-field IFS data cover about two effective radii of individual galaxies, and for a subset of them, we are acquiring additional IFS observations on sub-arcsecond scales with adaptive optics. We are also acquiring deep K-band imaging to trace the extended halos of the galaxies and measure accurate total magnitudes. Dynamical orbit modeling of the combined data will allow us to simultaneously determine the stellar, black hole, and dark matter halo masses. The primary goals of the project are to constrain the black hole scaling relations at high masses, investigate systematically the stellar initial mass function and dark matter distribution in massive galaxies, and probe the late-time assembly of ellipticals through stellar population and kinematical gradients. In this paper, we describe the MASSIVE sample selection, discuss the distinct demographics and structural and environmental properties of the selected galaxies, and provide an overview of our basic observational program, science goals and early survey results.

0	**Specific paper on galaxy interactions, such as mergers**	**NGC 3115**	https://ui.adsabs.harvard.edu/abs/2005A&A...443..373S/abstract	Extended very cold dust in the interacting HI ring galaxy pair NGC 2293 / 2292	The LGG 138 galaxy group members NGC 2292 and NGC 2293 were imaged with ISOPHOT in the far-infrared (FIR) at {60 μ m}, {100 μ m}, and {200 μ m}. While no FIR emission is seen at {60 μ m}, and only very low level emission is present at {100 μ m}, compact FIR emission from both NGC 2292 and NGC 2293 galaxy centres and extended emission likely associated with tidally removed dust and the HI ring surrounding NGC 2292 / 2293 is strongly detected at {200 μ m}. Additionally, a compact FIR source associated with the neighbouring galaxy NGC 2295 is strongly detected at {200 μ m}. Remarkably, none of these three galaxies have been detected individually in 21 cm HI emission. The steeply rising far-infrared spectral energy distribution of the apparently interacting NGC 2292 / 2293 pair towards longer wavelengths indicates the thermal emission of very cold dust with a temperature of 13 K, much lower than typical values of interacting systems or even quiescent spiral galaxies. The FIR data of this galaxy group clearly shows for the first time that there could be FIR dust emission not accompanied by HI, that dust even in an interacting system can have a very low dust temperature, and furthermore that gravitational interaction can give rise to an extended diffuse dust distribution.
1	**Properties of early type galaxies, well documented method application to determine parameters**	**NGC 3115**	https://arxiv.org/abs/1909.09368	Investigating Early-type Galaxy Evolution with a Multiwavelength Approach. III. Insights from SPH Simulations with Chemophotometric Implementation	We are exploring galaxy evolution in low-density environments exploiting smooth particle hydrodynamic simulations, including chemophotometric implementation. From a large grid of simulations of galaxy encounters and mergers starting from triaxial halos of gas and dark matter, we single out the simulations matching the global properties of our targets. These simulations are used to give insights into their evolution. We focus on 11 early-type galaxies selected because of their nearly passive stage of evolution in the nuclear region. However, a variety of UV features are detected in more than half of these galaxies. We find no significant differences in the formation mechanisms between galaxies with or without UV features. Major and minor mergers are able to reproduce their peculiar UV morphologies, and galaxy encounters are more suitable for “normal” early-type galaxies. Their star formation rate self-quenches several gigayears later than the merger/encounter occurred via gas exhaustion and stellar feedback, moving the galaxy from blue to red colors and driving the galaxy transformation. The length of the quenching is mass-dependent and lasts from 1 to 5 Gyr or more in the less massive systems. All of our targets are gas-rich at redshift 1. Three of them assembled at most 40% of their current stellar mass at z > 1, and seven assembled more than 40% between redshift 0.5 and 1. Their stellar mass grows by 4% by crossing the green valley before reaching their current position on the NUV-r versus M r diagram.
1	**Local Group**	**NGC 3115**	https://arxiv.org/abs/0705.4139	Our Peculiar Motion Away from the Local Void	The peculiar velocity of the Local Group of galaxies manifested in the cosmic microwave background dipole is found to decompose into three dominant components. The three components are clearly separated because they arise on distinct spatial scales and are fortuitously almost orthogonal in their influences. The nearest, which is distinguished by a velocity discontinuity at ~7 Mpc, arises from the evacuation of the Local Void. We lie in the Local Sheet that bounds the void. Random motions within the Local Sheet are small, and we advocate a reference frame with respect to the Local Sheet in preference to the Local Group. Our Galaxy participates in the bulk motion of the Local Sheet away from the Local Void. The component of our motion on an intermediate scale is attributed to the Virgo Cluster and its surroundings, 17 Mpc away. The third and largest component is an attraction on scales larger than 3000 km s-1 and centered near the direction of the Centaurus Cluster. The amplitudes of the three components are 259, 185, and 455 km s-1, respectively, adding collectively to 631 km s-1 in the reference frame of the Local Sheet. Taking the nearby influences into account, particularly that of the Local Void, causes the residual attributed to large scales to align with observed concentrations of distant galaxies and reduces somewhat the amplitude of motion attributed to their pull. Concerning the motion of ~260 km s-1 away from the Local Void, given the velocities expected from gravitational instability theory in the standard cosmological paradigm, the distance to the center of the Local Void must be at least 23 Mpc from our position. The Local Void is extremely large.
0	**NGC 3115 contains mostly old stars, this isn’t the case here.**	**NGC 3115**	https://arxiv.org/abs/1409.1131	A Spitzer View of the Giant Molecular Cloud MON OB1 EAST/NGC 2264	We present Spitzer 3.6, 4.5, 5.8, 8.0, and 24 μm images of the Mon OB1 East giant molecular cloud, which contains the young star forming region NGC 2264, as well as more extended star formation. With Spitzer data and Two Micron All Sky Survey photometry, we identify and classify young stellar objects (YSOs) with dusty circumstellar disks and/or envelopes in Mon OB1 East by their infrared-excess emission and study their distribution with respect to cloud material. We find a correlation between the local surface density of YSOs and column density of molecular gas as traced by dust extinction that is roughly described as a power law in these quantities. NGC 2264 follows a power-law index of ~2.7, exhibiting a large YSO surface density for a given gas column density. Outside of NGC 2264 where the surface density of YSOs is lower, the power law is shallower and the region exhibits a larger gas column density for a YSO surface density, suggesting the star formation is more recent. In order to measure the fraction of cloud members with circumstellar disks/envelopes, we estimate the number of diskless pre-main-sequence stars by statistical removal of background star detections. We find that the disk fraction of the NGC 2264 region is 45%, while the surrounding, more distributed regions show a disk fraction of 19%. This may be explained by the presence of an older, more dispersed population of stars. In total, the Spitzer observations provide evidence for heterogenous, non-coeval star formation throughout the Mon OB1 cloud.
1	**Nearby-Galaxies**	**NGC 3115**	https://arxiv.org/abs/1204.5188	Kinematic Signatures of Bulges Correlate with Bulge Morphologies and Sérsic Index	We use the Marcario Low Resolution Spectrograph at the Hobby-Eberly Telescope to study the kinematics of pseudobulges and classical bulges in the nearby universe. We present major axis rotational velocities, velocity dispersions, and h 3 and h 4 moments derived from high-resolution (σinst ≈ 39 km s-1) spectra for 45 S0 to Sc galaxies; for 27 of the galaxies we also present minor axis data. We combine our kinematics with bulge-to-disk decompositions. We demonstrate for the first time that purely kinematic diagnostics of the bulge dichotomy agree systematically with those based on Sérsic index. Low Sérsic index bulges have both increased rotational support (higher v/σ values) and on average lower central velocity dispersions. Furthermore, we confirm that the same correlation also holds when visual morphologies are used to diagnose bulge type. The previously noted trend of photometrically flattened bulges to have shallower velocity dispersion profiles turns out to be significant and systematic if the Sérsic index is used to distinguish between pseudobulges and classical bulges. The anti-correlation between h 3 and v/σ observed in elliptical galaxies is also observed in intermediate-type galaxies, irrespective of bulge type. Finally, we present evidence for formerly undetected counter-rotation in the two systems NGC 3945 and NGC 4736. This paper includes data taken at The McDonald Observatory of The University of Texas at Austin.

0	**Treats SN in the evolution of galaxies, could be interesting also for NGC 3115, but since it is rather general, will be considered as „not related“**	**NGC 3115**	https://arxiv.org/abs/0805.1138	Hydrodynamical simulations of Galactic fountains - I. Evolution of single fountains	The ejection of the gas out of the disc in late-type galaxies is related to star formation and is due mainly to Type II supernovae. In this paper, we studied in detail the development of the Galactic fountains in order to understand their dynamical evolution and their influence on the redistribution of the freshly delivered metals over the disc. To this aim, we performed a number of 3D hydrodynamical radiative cooling simulations of the gas in the Milky Way where the whole Galaxy structure, the Galactic differential rotation and the supernova explosions generated by a single OB association are considered. A typical fountain powered by 100 Type II supernovae may eject material up to ~2 kpc which than collapses back mostly in the form of dense, cold clouds and filaments. The majority of the gas lifted up by the fountains falls back on the disc remaining within a radial distance ΔR = 0.5 kpc from the place where the fountain originated. This localized circulation of disc gas does not influence the radial chemical gradients on large scale, as required by the chemical models of the Milky Way which reproduce the metallicity distribution without invoking large fluxes of metals. Simulations of multiple fountains fuelled by Type II supernovae of different OB associations will be presented in a companion paper.
0	**This isn’t a situation of a group of galaxies, although the Local Group itself is.**	**NGC 3115**	https://arxiv.org/abs/1601.01117	Friends-of-friends galaxy group finder with membership refinement. Application to the local Universe	Context. Groups form the most abundant class of galaxy systems. They act as the principal drivers of galaxy evolution and can be used as tracers of the large-scale structure and the underlying cosmology. However, the detection of galaxy groups from galaxy redshift survey data is hampered by several observational limitations. Aims: We improve the widely used friends-of-friends (FoF) group finding algorithm with membership refinement procedures and apply the method to a combined dataset of galaxies in the local Universe. A major aim of the refinement is to detect subgroups within the FoF groups, enabling a more reliable suppression of the fingers-of-God effect. Methods: The FoF algorithm is often suspected of leaving subsystems of groups and clusters undetected. We used a galaxy sample built of the 2MRS, CF2, and 2M++ survey data comprising nearly 80 000 galaxies within the local volume of 430 Mpc radius to detect FoF groups. We conducted a multimodality check on the detected groups in search for subgroups. We furthermore refined group membership using the group virial radius and escape velocity to expose unbound galaxies. We used the virial theorem to estimate group masses. Results: The analysis results in a catalogue of 6282 galaxy groups in the 2MRS sample with two or more members, together with their mass estimates. About half of the initial FoF groups with ten or more members were split into smaller systems with the multimodality check. An interesting comparison to our detected groups is provided by another group catalogue that is based on similar data but a completely different methodology. Two thirds of the groups are identical or very similar. Differences mostly concern the smallest and largest of these other groups, the former sometimes missing and the latter being divided into subsystems in our catalogue. The catalogues are available at the CDS via anonymous ftp to http://cdsarc.u-strasbg.fr (ftp://130.79.128.5) or via http://cdsarc.u-strasbg.fr/viz-bin/qcat?J/A+A/588/A14
1	**This paper would be interesting since it refers to our type S0 galaxy**	**NGC 3115**	https://arxiv.org/abs/0803.3025	Bimodality in low-luminosity E and S0 galaxies	Stellar population characteristics are presented for a sample of low-luminosity early-type galaxies (LLEs) in order to compare them with their more luminous counterparts. Long-slit spectra of a sample of 10 LLEs were taken with the ESO New Technology Telescope, selected for their low luminosities. Line strengths were measured on the Lick standard system. Lick indices for these LLEs were correlated with velocity dispersion (σ), alongside published data for a variety of Hubble types. The LLEs were found to fall below an extrapolation of the correlation for luminous ellipticals and were consistent with the locations of spiral bulges in plots of line strengths versus σ. Luminosity weighted average ages, metallicities and abundance ratios were estimated from χ2 fitting of 19 Lick indices to predictions from simple stellar population models. The LLEs appear younger than luminous ellipticals and of comparable ages to spiral bulges. These LLEs show a bimodal metallicity distribution, consisting of a low-metallicity group (possibly misclassified dwarf spheroidal galaxies) and a high-metallicity group (similar to spiral bulges). Finally, they have low α-element to iron peak abundance ratios indicative of slow, extended star formation.
0	**Since it is just survey results, will be considered as not relevant**	**NGC 3115**	https://arxiv.org/abs/1012.1655	A pilot study for the SCUBA-2 `All-Sky' Survey	We have carried out a pilot study for the Submillimetre Common-User Bolometer Array 2 (SCUBA-2) ‘All-Sky’ Survey (SASSy), a wide and shallow mapping project at 850 μm, designed to find rare objects, both Galactic and extragalactic. Two distinct sets of exploratory observations were undertaken and used to test the SASSy approach and data-reduction pipeline. The first was a 0?5 × 0?5 map around the nearby galaxy NGC 2559. The galaxy was easily detected at 156 mJy, but no other convincing sources are present in the map. Comparison with other galaxies with similar wavelength coverage indicates that NGC 2559 has relatively warm dust. The second observations cover 1 deg2 around the W5-E H II region. As well as diffuse structure in the map, a filtering approach was able to extract 27 compact sources with signal-to-noise ratio greater than 6. By matching with data at other wavelengths we can see that the SCUBA-2 data can be used to discriminate the colder cores. Together these observations show that the SASSy project will be able to meet its original goals of detecting new bright sources which will be ideal for follow-up observations with other facilities.
1	**This treats the subject of X-ray emissions and globular clusters that orbit about early type galaxies.**	**NGC 3115**	https://arxiv.org/abs/1205.0588	The Production Rate of SN Ia Events in Globular Clusters	In globular clusters, dynamical evolution produces luminous X-ray emitting binaries at a rate about 200 times greater than in the field. If globular clusters also produce SN Ia at a high rate, it would account for many of the SN Ia production in early-type galaxies and provide insight into their formation. Here we use archival Hubble Space Telescope (HST) images of nearby galaxies that have hosted an SN Ia to examine the rate at which globular clusters produce these events. The location of the SN Ia is registered on an HST image obtained before the event or after the supernova (SN) faded. Of the 36 nearby galaxies examined, 21 had sufficiently good data to search for globular cluster hosts. None of the 21 SNe have a definite globular cluster counterpart, although there are some ambiguous cases. This places an upper limit to the enhancement rate of SN Ia production in globular clusters of about 42 at the 95% confidence level, which is an order of magnitude lower than the enhancement rate for luminous X-ray binaries. Even if all of the ambiguous cases are considered as having a globular cluster counterpart, the upper bound for the enhancement rate is 82 at the 95% confidence level, still a factor of several below that needed to account for half of the SN Ia events. Barring unforeseen selection effects, we conclude that globular clusters are not responsible for producing a significant fraction of the SN Ia events in early-type galaxies.

1	**Early-type galaxy; this paper is interesting to learn about the form of the galaxy which might show tidal debris**	**NGC 3115**	https://arxiv.org/abs/1204.3879	Early-type Galaxies with Tidal Debris and Their Scaling Relations in the Spitzer Survey of Stellar Structure in Galaxies (S4G)	Tidal debris around galaxies can yield important clues on their evolution. We have identified tidal debris in 11 early-type galaxies (T <= 0) from a sample of 65 early types drawn from the Spitzer Survey of Stellar Structure in Galaxies (S4G). The tidal debris includes features such as shells, ripples, and tidal tails. A variety of techniques, including two-dimensional decomposition of galactic structures, were used to quantify the residual tidal features. The tidal debris contributes ~3%-10% to the total 3.6 μm luminosity of the host galaxy. Structural parameters of the galaxies were estimated using two-dimensional profile fitting. We investigate the locations of galaxies with tidal debris in the fundamental plane and Kormendy relation. We find that galaxies with tidal debris lie within the scatter of early-type galaxies without tidal features. Assuming that the tidal debris is indicative of recent gravitational interaction or merger, this suggests that these galaxies have either undergone minor merging events so that the overall structural properties of the galaxies are not significantly altered, or they have undergone a major merging events but already have experienced sufficient relaxation and phase mixing so that their structural properties become similar to those of the non-interacting early-type galaxies.
1	**At about 7 Mpc**	**NGC 3115**	https://arxiv.org/abs/0808.2529	Deep Near-Infrared Surface Photometry of 57 Galaxies in the Local Sphere of Influence	We present H-band (1.65 μm) surface photometry of 57 galaxies drawn from the Local Sphere of Influence (LSI), with distances of less than 10 Mpc from the Milky Way. The images, with a typical surface brightness limit 4 mag fainter than the Two Micron All Sky Survey (2MASS) (24.5 mag arcsec-2 < μlim < 26 mag arcsec-2), have been obtained with the Infrared Imager and Spectrograph 2 on the 3.9 m Anglo-Australian Telescope. A total of 22 galaxies that remained previously undetected in the near-infrared (NIR), and potentially could have been genuinely young galaxies, were found to have an old stellar population with a star density 1-2 mag below the 2MASS detection threshold. The cleaned NIR images reveal the morphology and extent of many of the galaxies for the first time. For all program galaxies, we derive radial luminosity profiles, ellipticities, and position angles, together with global parameters such as total magnitude, mean effective surface brightness, and half-light radius. Our results show that 2MASS underestimates the total magnitude of galaxies with langμ H rangeff between 18 and 21 mag arcsec-2 by up to 2.5 mag. The Sérsic parameters that best describe the observed surface brightness profiles are also presented. By adopting accurate galaxy distances and an H-band mass-to-light ratio of Upsilon H * = 1.0 ± 0.4, the LSI galaxies are found to cover a stellar-mass range of 5.6<log _{10}(M_stars)<11.1. The results are discussed along with previously obtained optical data. Our sample of low-luminosity galaxies is found to closely follow the optical-infrared B-versus-H luminosity relation defined by brighter galaxies, with a slope of 1.14 ± 0.02 and a scatter of 0.3 mag. Finally, we analyze the luminosity-surface brightness relation to determine an empirical mass-to-light ratio of Upsilon H * = 0.78 ± 0.08 for late-type galaxies in the H band.
0	**Not a dwarf galaxy**	**NGC 3115**	https://arxiv.org/abs/1206.5585	Hα survey of nearby dwarf galaxies	We present the Hα imaging data and flux measurements for 30 dwarf galaxies in the Local Volume. The Hα fluxes are used to derive the galaxy star-formation rate (SFR). The sample of observed galaxies is characterized by the following parameters: a median distance of 7.5 Mpc, median blue absolute magnitude of -14.8 mag and median SFR of -2.0 dex. Two dSph members of the Local Group, Cetus and Leo IV, do not show signs of star formation, with rates of -5.4 and -7.0 dex, respectively. The BCD galaxy ESO 553-46 has one of the highest specific SFRs among the Local Volume galaxies.
0	**Although in sky region with Orion**	**NGC 3115**	https://arxiv.org/abs/0801.2585	Main-Sequence Fitting Distance to the σ Ori Cluster	The σ Ori cluster is an unbound aggregate of a few hundred young, low-mass stars centered on the multiple system σ Ori. This cluster is of great interest because it is at an age when roughly half of the stars have lost their protoplanetary disks, and the cluster has a very large population of brown dwarfs. One of the largest sources of uncertainty in the properties of the cluster is that the distance is not well known. The directly measured Hipparcos distance to σ Ori AB is 350+120 -90 pc. On the other hand, the distance to the Orion OB1b subgroup (of which σ Ori is thought to be a member), 473 +/- 40 pc, is far better determined, but it is an indirect estimate of the cluster's distance. Also, Orion OB1b may have a depth of 40 pc along our line of sight. We use main-sequence fitting to nine main-sequence cluster members to estimate a best-fit distance of 420 +/- 30 pc, assuming a metallicity of -0.16 +/- 0.11 or 444 pc assuming solar metallicity. A distance as close as 350 pc is inconsistent with the observed brightnesses of the cluster members. At the best-fit distance, the age of the cluster is 2-3 Myr.
0	**Although in sky region with Orion**	**NGC 3115**	https://arxiv.org/abs/1108.4622	A Third Massive Star Component in the σ Orionis AB System	We report on the detection of a third massive star component in the σ Orionis AB system, traditionally considered as a binary system. The system has been monitored by the IACOB Spectroscopic Survey of Northern Massive Stars program, obtaining 23 high-resolution FIES@NOT spectra with a time span of ~2.5 years. The analysis of the radial velocity curves of the two spectroscopic components observed in the spectra has allowed us to obtain the orbital parameters of the system, resulting in a high eccentric orbit (e ~ 0.78) with an orbital period of 143.5 ± 0.5 days. This result implies the actual presence of three stars in the σ Orionis AB system when combined with previous results obtained from the study of the astrometric orbit (with an estimated period of ~157 years). Based on observations made with the Nordic Optical Telescope, operated on the island of La Palma jointly by Denmark, Finland, Iceland, Norway, and Sweden, in the Spanish Observatorio del Roque de los Muchachos of the Instituto de Astrofisica de Canarias.

0	**Not a dwarf galaxy but might be related in that it has a bulge and it might be interesting to research about the halo**	**NGC 3115**	https://arxiv.org/abs/1405.4854	Dwarf Galaxy Dark Matter Density Profiles Inferred from Stellar and Gas Kinematics	We present new constraints on the density profiles of dark matter (DM) halos in seven nearby dwarf galaxies from measurements of their integrated stellar light and gas kinematics. The gas kinematics of low-mass galaxies frequently suggest that they contain constant density DM cores, while N-body simulations instead predict a cuspy profile. We present a data set of high-resolution integral-field spectroscopy on seven galaxies and measure the stellar and gas kinematics simultaneously. Using Jeans modeling on our full sample, we examine whether gas kinematics in general produce shallower density profiles than are derived from the stars. Although two of the seven galaxies show some localized differences in their rotation curves between the two tracers, estimates of the central logarithmic slope of the DM density profile, γ, are generally robust. The mean and standard deviation of the logarithmic slope for the population are $\gamma = 0.67 \pm 0.10$ when measured in the stars and $\gamma = 0.58 \pm 0.24$ when measured in the gas. We also find that the halos are not under-concentrated at the radii of half their maximum velocities. Finally, we search for correlations of the DM density profile with stellar velocity anisotropy and other baryonic properties. Two popular mechanisms to explain cored DM halos are an exotic DM component or feedback models that strongly couple the energy of supernovae into repeatedly driving out gas and dynamically heating the DM halos. While such models do not yet have falsifiable predictions that we can measure, we investigate correlations that may eventually be used to test models. We do not find a secondary parameter that strongly correlates with the central DM density slope, but we do find some weak correlations. The central DM density slope weakly correlates with the abundance of α elements in the stellar population, anti-correlates with H I fraction, and anti-correlates with vertical orbital anisotropy. We expect, if anything, the opposite of these three trends for feedback models. Determining the importance of these correlations will require further model developments and larger observational samples. This paper includes data obtained at The McDonald Observatory of The University of Texas at Austin.
1	**Typical study on parameters of a galaxy, interesting to learn how the methods get applied**	**NGC 3115**	https://arxiv.org/abs/1803.03653	Spectroscopic decomposition of NGC 3521: unveiling the properties of the bulge and disc	We study the kinematics and the stellar populations of the bulge and disc of the spiral galaxy NGC 3521. At each position in the field of view, we separate the contributions of the bulge and the disc from the total observed spectrum and study their kinematics, age, and metallicities independently. Their properties are clearly distinct: the bulge rotates more slowly, has a higher velocity dispersion, and is less luminous than the disc. We identify three main populations of stars in NGC 3521: old (≥7 Gyr), intermediate (≈3 Gyr), and young (≤1 Gyr). The mass and light of NGC 3521 are dominated by the intermediate stellar population. The youngest population contributes mostly to the disc component and its contribution increases with radius. We also study the luminosity-weighed properties of the stars in NGC 3521. Along the photometric major axis, we find (i) no age gradient for the stars in the bulge, and a negative age gradient for the stars in the disc; (ii) negative metallicity gradients and subsolar α-enhancement for both the bulge and the disc. We propose the following picture for the formation of NGC 3521: initial formation a long time ago (≥7 Gyr), followed by a second burst of star formation or a merger (≈3 Gyr ago), which contributed predominantly to the mass build-up of the bulge. Recently (≤1 Gyr), the disc of NGC 3521 experienced an additional episode of star formation that started in the innermost regions.
1	**Subject halo**	**NGC 3115**	https://arxiv.org/abs/1004.5376	Hot Gas Halos in Early-type Field Galaxies	We use Chandra and XMM-Newton to study the hot gas content in a sample of field early-type galaxies. We find that the L X-L K relationship is steeper for field galaxies than for comparable galaxies in groups and clusters. The low hot gas content of field galaxies with L K lap L sstarf suggests that internal processes such as supernovae-driven winds or active galactic nucleus feedback expel hot gas from low-mass galaxies. Such mechanisms may be less effective in groups and clusters where the presence of an intragroup or intracluster medium can confine outflowing material. In addition, galaxies in groups and clusters may be able to accrete gas from the ambient medium. While there is a population of L K lap L sstarf galaxies in groups and clusters that retain hot gas halos, some galaxies in these rich environments, including brighter galaxies, are largely devoid of hot gas. In these cases, the hot gas halos have likely been removed via ram pressure stripping. This suggests a very complex interplay between the intragroup/intracluster medium and hot gas halos of galaxies in rich environments, with the ambient medium helping to confine or even enhance the halos in some cases and acting to remove gas in others. In contrast, the hot gas content of more isolated galaxies is largely a function of the mass of the galaxy, with more massive galaxies able to maintain their halos, while in lower mass systems the hot gas escapes in outflowing winds.
1	**Comparision of parameters between early typ (ETG) and late type (LTG)**	**NGC 3115**	https://arxiv.org/abs/1908.06838	Revealing Hidden Substructures in the M BH-σ Diagram, and Refining the Bend in the L-σ Relation	Using 145 early- and late-type galaxies (ETGs and LTGs) with directly measured supermassive black hole masses, M BH, we build upon our previous discoveries that: (i) LTGs, most of which have been alleged to contain a pseudobulge, follow the relation {M}BH}\propto {M}* ,{sph}2.16+/- 0.32; and (ii) the ETG relation {M}BH}\propto {M}* ,{sph}1.27+/- 0.07 is an artifact of ETGs with/without disks following parallel {M}BH}\propto {M}* , {sph}1.9+/- 0.2 relations that are offset by an order of magnitude in the M BH direction. Here, we searched for substructure in the diagram of M BH versus central velocity dispersion σ, using our recently published multi-component galaxy decompositions, by investigating divisions based on the presence of a depleted stellar core (major dry merger), a disk (minor wet/dry merger, gas accretion), or a bar (evolved unstable disk). The Sérsic and core-Sérsic galaxies define two distinct relations: {M}BH}\propto {σ }5.75+/- 0.34 and {M}BH}\propto {σ }8.64+/- 1.10, with {{{Δ }}}rms| {BH}}=0.55 and 0.46 dex, respectively. We also report on the consistency with the slopes and bends in the galaxy luminosity (L)-σ relation due to Sérsic and core-Sérsic ETGs, and LTGs that all have Sérsic light profiles. Two distinct relations (superficially) reappear in the M BH-σ diagram upon separating galaxies with/without a disk (primarily for the ETG sample), while we find no significant offset between barred and non-barred galaxies, nor between galaxies with/without active galactic nuclei. We also address selection biases purported to affect the scaling relations for dynamically measured M BH samples. Our new M BH-σ relations, dependent on morphological type, more precisely estimate M BH in other galaxies, and hold implications for galaxy/black hole coevolution theories, simulations, feedback, the pursuit of a black-hole fundamental plane, and calibration of virial f-factors for reverberation mapping.

1	**It is impossible to check this, because SDSS data for emission and absorption lines not available, but this is the type of study that analyzes and interprets this data.**	**NGC 3115**	https://arxiv.org/abs/0912.0275	The SAURON project - XVI. On the sources of ionization for the gas in elliptical and lenticular galaxies	Following our study on the incidence, morphology and kinematics of the ionized gas in early-type galaxies, we now address the question of what is powering the observed nebular emission. To constrain the likely sources of gas excitation, we resort to a variety of ancillary data we draw from complementary information on the gas kinematics, stellar populations and galactic potential from the SAURON data, and use the SAURON-specific diagnostic diagram juxtaposing the [OIII] λ5007/Hβ and [NI] λλ5197, 5200/Hβ line ratios. We find a tight correlation between the stellar surface brightness and the flux of the Hβ recombination line across our sample, which points to a diffuse and old stellar source as the main contributor of ionizing photons in early-type galaxies, with post-asymptotic giant branch (pAGB) stars being still the best candidate based on ionizing balance arguments. The role of AGN photoionization is confined to the central 2-3arcsec of an handful of objects with radio or X-ray cores. OB-stars are the dominant source of photoionization in 10 per cent of the SAURON sample, whereas for another 10 per cent the intense and highly ionized emission is powered by the pAGB population associated to a recently formed stellar subcomponent. Fast shocks are not an important source of ionization for the diffuse nebular emission of early-type galaxies since the required shock velocities can hardly be attained in the potential of our sample galaxies. Finally, in the most massive and slowly or non-rotating galaxies in our sample, which can retain a massive X-ray halo, the finding of a spatial correlation between the hot and warm phases of the interstellar medium (ISM) suggests that the interaction with the hot ISM provides an additional source of ionization besides old ultraviolet-bright stars. This is also supported by a distinct pattern towards lower values of the [OIII]/Hβ ratio. These results lead us to investigate the relative role of stellar and AGN photoionization in explaining the ionized gas emission observed in early-type galaxies by the Sloan Digital Sky Survey (SDSS). By simulating how our sample galaxies would appear if placed at further distance and targeted by the SDSS, we conclude that only in very few, if any, of the SDSS galaxies which display modest values for the equivalent width of the [OIII] line (less than ~2.4 Å) and low-ionization nuclear emission-line region like [OIII]/Hβ values the nebular emission is truly powered by an AGN.
0	**Specific for Betelgese**	**NGC 3115**	https://arxiv.org/abs/1804.01831	Evolution of the magnetic field of Betelgeuse from 2009-2017	Context. Betelgeuse is an M-type supergiant that presents a circularly polarized (Stokes V) signal in its line profiles, interpreted in terms of a surface magnetic field. Aims: The weak circular polarization signal has been monitored over 7.5 years in order to follow its evolution on different timescales, and eventually to determine its physical origin. Linear polarization measurements have also been obtained regularly in the last few years. Methods: We used both the ESPaDOnS and Narval spectropolarimeters to obtain high signal-to-noise ratio spectra, which were processed by means of the least-squares deconvolution method. In order to ensure the reality of the very weak circular polarization, special care has been taken to limit instrumental effects. In addition, several tests were performed on the Stokes V signal to establish its stellar and Zeeman origin. Results: We confirm the magnetic nature of the circular polarization, pointing to a surface magnetic field of the order of 1 G. The Stokes V profiles present variations over different timescales, the most prominent one being close to the long secondary period (LSP; around 2000 d for Betelgeuse) often invoked in red evolved stars. This long period is also dominant for all the other Stokes parameters. The circular polarization is tentatively modeled by means of magnetic field concentrations mimicking spots, showing in particular that the velocity associated with each "spot" also follows the long timescale, and that this signal is nearly always slightly redshifted. Conclusions: From the coupled variations of both linear and circular polarization signatures in amplitude, velocity and timescale, we favour giant convection cells as the main engine at the origin of polarization signatures and variations in all the Stokes parameters. This strengthens support for the hypothesis that large convective cells are at the origin of the LSP. Based on observations obtained at the Télescope Bernard Lyot (TBL) at Observatoire du Pic du Midi, CNRS/INSU and Université de Toulouse, France, and at the Canada-France-Hawaii Telescope (CFHT) which is operated by the National Research Council of Canada, CNRS/INSU and the University of Hawaii.